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DECEMBER 1958

THE Airman

OFFICIAL JOURNAL OF THE AIR FORCE

GOVERNMENT PUBLICATIONS JUL 23 1958 CLEMSON LIBRARY

ANGELS WITH SILVER WINGS
page 4

The *THOR-ABLE*—
USAF's lunar probe missile—
and the *PIONEER*.
For the picture story of the
Manchester ground-tracking
station, see page 38.

THE Airman

OFFICIAL JOURNAL OF THE AIR FORCE

VOLUME II, NUMBER 11 DECEMBER 1958

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Director of Information Services
Office of the Secretary of the Air Force
MAJ. GEN. ARNO H. LUEHMAN

Chief, Internal Information
Office of Information Services
COL. ROBERT B. GOOD

Editor
LT. COL. HARMON H. HARPER

Assistant Editor
DAVE KARTEN

Executive Editor
CAPT. TED R. STURM

Art Director
SMS LESTER B. BOUNDS

Departmental Editor
M SGT. HAROLD E. BAMFORD

Production and Distribution
RUSSELL M. WOODS

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A MATTER OF TERMS

Sir: *In Mr. Kinney's article,* Slants on Space, *in the August issue of* THE AIRMAN, *he states that escape velocity is 18,000 m.p.h. Was my physics professor wrong when he said it was 25,000 m.p.h.?*

A/2C Melvin Green
Keesler AFB, Miss.

Mr. Kinney is quick to assure Airman Green that his physics professor is a first rate teacher. In the nomenclature of celestial mechanics, the term, as used in the article, would properly be "circular velocity." However, because of the common tendency to relate the word "circular" to something in the nature of a perfect circle, the term was deliberately avoided. No perfectly circular orbit is yet known and, therefore, it was felt that use of this term might be unnecessarily confusing. The same basic mathematical formula applies for computing both circular and escape velocity. Circular velocity works out in the neighborhood of 0.707 times the speed of escape velocity. In future articles, when such a reference is necessary, use will be made of some nontechnical term such as "velocity to orbit" to prevent confusion.

★ ★ ★

PRO PAY PLEA

Sir: *I would like to know if personnel possessing AFSCs 70250 and 70270 and working in jobs with heavy security responsibilities are being considered for inclusion in the new proficiency pay program. It seems to me the added security considerations should be a governing factor.*

S/Sgt. Harold E. Johnson
APO 239, San Francisco, Calif.

Officials in the Career Development Division DCS/Personnel, Hq USAF, indicate that proficiency pay was designed primarily for use in those occupational areas considered most critical by reason of poor retention and high training investments. The Air Force considers that all authorized skills are essential to the USAF mission; however, the number of airmen who can be brought into the proficiency pay program is extremely small, being limited by law to 15 percent or a total of roughly 107,000. While the duties outlined above are admittedly essential, they do not fall within the guidelines for award of the special pay. Details on the program were outlined in the November issue of THE AIRMAN. (See *Pro Pay's Here,* Airman's World.)

★ ★ ★

WHOOPS

Sir: *The article by M/Sgt. Paul Turner,* Do What? Under What?, *in the August issue of* THE AIRMAN *was excellent, but the personal and family services officer referred to in the story must have had a very worn copy of your magazine. My copy with the picture of General White on the cover is the September 1957 issue.*

M/Sgt. Sidney Hibma
Bismarck, N. Dak.

As punishment for such a gross and inexcusable oversight, Sergeant Turner and other staff members who read copy on the story will write, "In the future, refer to the files," 1,000 times. You're right, the issue was September '57, not August.

MISTAKEN IDENTITY

Sir: *In the August issue of* THE AIRMAN, *on page 18, you credited the 2712th Equipment Repair Squadron with a task they did not accomplish. The 2712th Aircraft Repair Squadron, of which I was a member, was the organization responsible for the salvage of the "Tamagawa Cruiser." (See cut.)*

S/Sgt. Bob Weiss
James Connally AFB, Tex.

Sergeant Weiss has reference to the story, *Get-It-Done Guys.* The paragraph in question, however, credits the 2712th ERS with parts manufacture for the Republic F-84G *Thunderjets* mentioned in the preceding paragraph. No mention was made of the unit responsible for the salvage of the "Tamagawa Cruiser." THE AIRMAN staff is happy to tip its collective hat to the men of the 2712th Aircraft Repair Squadron for their part in this salvage mission.

★ ★ ★

E-8 PROMOTIONS

Sir: *Announcement of the initial E-8 promotion list has led to a great deal of controversy at this station. Not a single first sergeant was promoted locally. Is this an indication that USAF is going to eliminate this position? Also many people are wondering what criteria was used in selecting those who were promoted.*

M/Sgt. Kenneth Logan
APO 845, New York, N. Y.

Officials in the Promotions and Separations Division, DCS/Personnel, Hq USAF, indicate that the following criteria were established for promotion consideration to grade E-8: possession of 7-level AFSC; achievement of a satisfactory score on the Supervisory Examination (AFPTR-28); a minimum of 24 months in the grade of master sergeant (E-7) as of September 1, 1958; and 10 years' active military service as of that same date.

All master sergeants (E-7) who met

the eligibility criteria were considered on the basis of Air Force-wide vacancies in each superintendent AFSC. Eligible first sergeants (AFSC 73170) were considered for promotion in AFSC 73080 (Personnel) or in any additional AFSC in which they were qualified. Demonstration of leadership and supervisory ability, supervisor's evaluation, other evaluation instruments available, commander's recommendation, and promotion board evaluation were all considered. The best qualified method of selection was employed. This means eligible masters competed with one another in their respective career fields, rather than against a standard.

USAF does not intend to abolish the first sergeant position. These may be authorized a grade of either E-8 or E-9. However, due to austere limitations on the grade totals, only a limited number of first sergeant positions may be authorized the super grades. In selecting certain of these positions for advancement, it was recommended to commanders of major air commands that special consideration be given to the size and mission of the organization.

★ ★ ★

IN MY OPINION

Sir: *In regard to the article,* Prepare for Promotion *which appeared in the September 1958 issue of* THE AIRMAN, *we protest.*

M/Sgt. John Pope, the author, stated that promotions through staff sergeant are virtually "automatic." The undersigned all have more than 30 months each in the grade of airman second class. All of us feel that we are technically capable of holding higher ranks and would like to know where the "automatic" stripes are.

A/2C Harlan Philpot
A/2C Dale Pier
A/2C Donald Cernohaus
A/2C William Aldrich
APO 231, New York, N. Y.

Sir: *Sergeant Pope in his article,* In My Opinion, *gives the impression that anyone who doesn't make airman first class or staff sergeant in his first hitch is a complete idiot. I have been working with missiles for four years where technical ability counts and have often seen men with less technical ability promoted over those highly skilled. Where do you find all these automatic promotions?*

A/1C Cecil Casey
APO 132, New York, N. Y.

First, to the readers who wrote concerning Sergeant Pope's article, and to all others as well, the articles which have, and will continue to run under the heading *In My Opinion,* are precisely that, the author's opinion. They are being printed primarily with the goal in mind of encouraging USAF personnel to think about items of interest to everyone in the Air Force. From the reaction to date, they are doing exactly that.

With specific regard to *Prepare for Promotion,* Sergeant Pope was attempting to make a very important point—namely that it takes more than technical know-how to qualify as a successful NCO. Supervisory responsibility is on an equal plane with technical responsibility, and the man who possesses both attributes stands a much better chance of reaching the higher enlisted ranks.

★ ★ ★

PAT ON THE BACK

Sir: *As a fellow writer and thorough believer in the contract school concept I would like to congratulate you on* Because It's Cheaper *in your September issue. Captain Sturm really packed a lot of information into two pages and the layout men also did an attractive job.*

LeRoy Spruill
Spence AFB, Ga.

★ ★ ★

OUR ERROR

Sir: *I have just finished reading the September issue of* THE AIRMAN *and noted the announcement of the retirement of M/Sgt. Joseph P. W. Arnold, brother of the late Gen. H. H. "Hap" Arnold. To me, the article left the impression that Sergeant Arnold had never progressed beyond the grade at which he retired. This is not true. I had the pleasure of working with him at Eielson AFB, Alaska during 1952-53 at which time he was a lieutenant colonel, assigned as Director of Materiel, 5010th Composite Wing (M).*

M/Sgt. Raymond Orozco
Bolling AFB, D. C.

In This Issue

The Air Force flight nurse on this month's cover is Capt. Martha T. Marsch, who has been serving with MATS' 12th Aeromedical Transport Squadron (Light), McGuire AFB, N. J., since last May. A graduate of Central Islip State Hospital, Long Island, she has six years' service. U. S. Navy photographer, PH 2 T. E. Richardson, took the photo. He's with the Naval Air Transport Wing (Atlantic), MATS, also at McGuire AFB. The cover symbolizes the dual dedication of all USAF flight nurses—to the service of humanity and the service of their country. *Angels with Silver Wings,* page 4, is the story of these women and the organizations with which they serve.

Be sure to watch for next month's issue which will feature several pages highlighting the strides forward taken by the Air Force in 1958. THE AIRMAN will cover synopses of operations, personnel actions, training, missiles, aircraft, space, and research and development. This up-to-date word will fill you in on any major developments you may have missed. In addition there will be a story on Eglin's famous climatic hangar; a revealing report on how your survivors could suffer unless you prepare now; and THE AIRMAN's regular features.

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ANGELS WITH SILVER WINGS

A UNITED STATES soldier, serving at a forward position along the United Nations truce line in Korea is performing his duty: patrol. It is a seemingly endless life of lonely patrols, but his job is an important one—to help keep the peace in a spot nearly 6,000 miles from home.

As he walks his solitary post a dust-covered military truck lumbers up loaded with heavy drums of fuel destined for a tank unit farther along the line. As it starts to pass, a tire blows out. The huge truck careens crazily toward him, the driver struggling with the wheel. Before he can dodge the tons of metal bearing down, it's upon him. The soldier sees a blur of color, feels stabbing pain and then, the nothingness of unconsciousness.

When he comes to his eyes frantically search his surroundings. He is in a room in bed. Its white walls dazzle his weary eyes. His mind recalls the accident, it must be a hospital room. A face comes into focus. It is the concerned face of a nurse. She tells him of the accident and that he has been seriously injured; his back. He has been paralyzed as the result of severe

damage to his spinal cord. The terrifying words become reality as the soldier tries to move his limbs and can't. A doctor appears and adds reassuringly that he has an excellent chance to recover. The doctor tells the young soldier he has undergone an emergency operation and is in the Air Force hospital at Tachikawa Air Base, Japan. He was flown there from Korea and will shortly be returned to the United States for special treatment.

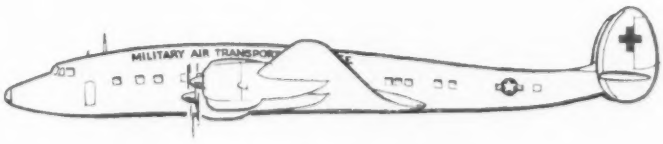
Questions fill the soldier's anxious mind: How serious is it? Will I recover? How will they send me home? When will I leave? Will it hurt when they move me? How long will it take? Could I die on the way?

The answers to most of the soldier's questions depend on the aeromedical evacuation service of the Military Air Transport Service (MATS) and its highly skilled, hard-working flight nurses, doctors, and medical technicians. It is their job to get him to a hospital in the U. S. quickly and safely, and to provide the best possible professional care enroute.

No U. S. serviceman, no matter where he serves in the world, is more than 72 hours away from the most modern medical facilities available in the United States.

The aeromedical evacuation service, one of many technical support services charged to MATS, has aircraft and medical flight teams in the air nearly every minute around the clock each day of the year. Since its inception in 1949, MATS air evac has transported more than 500,000 patients. Its aircraft crisscross the globe spanning the vast reaches of the Pacific, Atlantic, Europe, Africa, the Far East, and Middle East, and operate on a wide scale within the U. S. The air evac mission is "to transport the sick and injured to hospitals in the shortest time possible so that they can receive expert medical care." A major part of this mission is to give patients the best possible nursing care in flight so that they will reach their destination in better (or as good) condition than when they were onloaded into the aircraft.

The story of the aeromedical evacuation service of USAF's Military Air Transport Service



by Herb Doherty
Editor, Republic Aviation News

MATS, commanded by Lt. Gen. William H. Tunner, with headquarters at Scott AFB, Ill., is divided into two major divisions; the Eastern Transport Air Force (EASTAF), with headquarters at McGuire AFB, N. J.; and the Western Transport Air Force (WESTAF) headquartered at Travis AFB, Calif. It is also responsible for four highly important support services; Airways and Air Communication Service, Air Photographic and Charting Service, Air Rescue Service, and the Air Weather Service. Aeromedical evacuation units operate within EASTAF and WESTAF. USAF's troop carrier units also play a role in air evac; getting patients to aeromedical evacuation squadrons attached to troop carrier wings. This is the first step in combat air evac operations.

Briefly, the aeromedical evacuation system works like this. Once patients are brought to air evac squadrons they are moved from overseas by MATS aircraft. These aircraft are returning to the U. S. from cargo and passenger flights. Those under EASTAF control arrive at McGuire AFB while patients from the Pacific area come into Travis AFB. On arrival in the U. S. patients enter the highly complex domestic system operated by the 1st Aeromedical Transport Group located at Brooks AFB, Tex. This domestic system has five squadrons placed at Brooks, McGuire, Travis, Scott, and Brookley Air Force Bases.

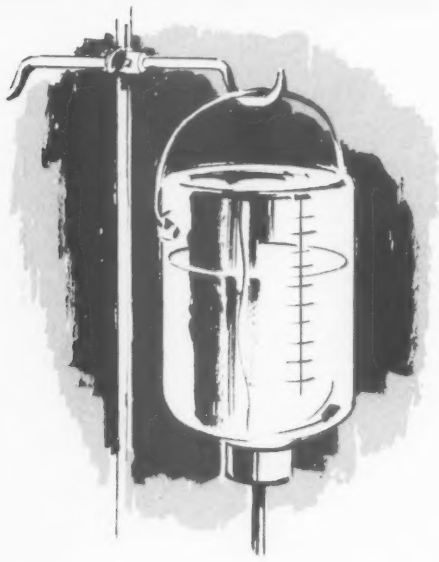
Patients are moved across the U. S. over direct air routes between these bases. These routes are called "trunk lines." From these major points in the air evac domestic system patients travel to receiving hospitals by a system of "feeder line" flights. The feeder line is a vast network of air routes connecting more than 400 military- and government-operated hospitals. Movement from overseas to one of these hospitals takes but a few days.

In flight the patients are cared for by flight teams. Overseas air evac flights carry two flight nurses and three medical technicians. These nurses and techs are specially trained for in-flight medical care. Nurses receive a comprehensive course in flight nursing at Gunter AFB, Ala., by a branch of the Air Force School of Aviation Medicine. Some of the subjects covered are aeromedical nursing supplies, in-flight feeding, oxygen therapy, litter loading, physics of the atmosphere, rescue and survival, surgery, psychiatry, aeronautical sciences, and the effects of atomic weapons. Medical technicians are also trained at Gunter.

Aircraft used are four-engine C-121s, C-97s, and C-118s converted to "flying ambulances" for the flight to the U. S. On flights to overseas bases these aircraft carry high priority cargo, troops, and passengers, and on the return trip air evac patients.

In the domestic system the basic airplane is the twin-engine C-131 which is especially outfitted for aeromedical evacuation use. It carries a medical team of one flight nurse and two techs. These "flying hospital wards" are pressurized, equipped with modern air conditioning and heating systems, oxygen facilities for all patients, and can transport and operate such special medical equipment as full-body iron lungs, chest respirators, incubators, and aspirators.

The worth of air evacuation has been proven in time of



peace and war. Although carried out on a large scale in World War II, it was still supplemental to surface travel. It was not until the Korean conflict that its true value could be measured. It was found that air evacuation, along with the use of whole blood, plasma, and antibiotics, was responsible for reducing the death rate of combat wounded to 50 percent below that of WW II. Each year approximately 40,000 patients are transported on nearly 60,000 flights by MATS air evac.

In recent years air evac has accomplished some outstanding feats. Among them is Operation Wounded Warrior carried out in 1954 when air evac aircraft and medical teams flew the longest mercy mission in aviation history. More than 500 French troops wounded at Dien Bien Phu in Indochina were air-lifted three-quarters of the way around the world.

The Flight Nurse

Since a doctor is assigned only on special flights carrying patients suffering from polio or burns, or in a highly critical condition, the flight nurse is the keystone of the flight team. She is the leader.

The flight nurse is a well trained member of the medical team. In addition to her nursing skills she must possess the qualities that make leaders. Among them are courage, intelligence, imagination, integrity, initiative, energy, and confidence.

Her most important attribute, the one most indispensable, is initiative or resourcefulness. The flight nurse can expect patients from the spectrum of disease and disaster. One patient may be severely wounded, his life literally hanging by a thread. The next may be a violent psychotic. She must be able to cope with both, individually and simultaneously if necessary—within the confines of an airplane cabin thousands of feet in the air. Infant polio victims, cardiac patients, a dependent suffering with tuberculosis, an expectant mother, and more critical cases are all in a day's work to the flight nurse—and most times that day is a long one.

It has been said that "any young woman who becomes a flight nurse must have a sincere interest in flying secondary to only one thing—her deep interest in nursing." But there is still another important trait—the intense desire to serve above and beyond the call of duty expected of the average civilian or Armed Forces nurse. Being a flight nurse also requires a willingness to serve under many adverse conditions.

The first statement in the flight nurses' creed of ethics tells the story:

"I will summon every resource to prevent the triumph of death over life."

Air Evac Mission

To see how a typical air evac mission operates, let's travel aboard an aeromedical evacuation flight from Hickam AFB, Honolulu, T. H., to Travis AFB. The unit responsible for the flight is the 1453rd Aeromedical Evacuation Squadron, 1502d Air Transport Wing, WESTAF, based at Hickam.

The 1453rd has 13 flight nurses, eight USAF and five USN, plus 17 medical technicians. The 1453rd is also supported by a detachment assigned to Tachikawa Air Base, Japan. Seven USAF and USN flight nurses are assigned to the detachment.

The smooth-running 1453rd, well schooled in air evac operations, handles flights throughout the Pacific area. Missions include flights to and from Tachikawa, Manila, Guam, Okinawa, Iwo Jima, Wake, Kwajalein, Midway, and Johnson Islands, and Travis AFB in the U. S. In one six-month period approximately 2,500 patients were transported by the 1453rd.

On the air evac mission we will take to Travis, the members of the flying medical team are U. S. Navy Lt. S. G. Melva Stankovitch, and U. S. Air Force 1st Lt. Rose Mocnik, nurses, and medical technicians A/1C Ted Easterbrook, A/2C Bobby Dean, and A/2C Cefernino Suarez. The aircraft is a four-engine C-121.

0700: Lieutenants Mocnik and Stankovitch receive a telephone message from the 1453rd O. D. placing them on alert for the flight. The O. D. reports the patient manifest will be delivered from Tripler Army Hospital (located at Schofield Barracks) in a few hours.

0930: Nurses Mocnik and Standkovitch arrive at squadron headquarters located near the flight line and receive copies of the manifest—33 patients; 16 litter cases, 16 ambulatory (walking patients) and one critical patient, a soldier from Korea with a severe spinal cord injury. The one struck by the truck. He will be transported on a Stryker frame, a metal litter-shaped device used to transport patients who must be kept immobile during the flight. A patient on a Stryker frame may also be kept in traction. It is securely clamped to the aircraft deck and may be rotated to aid in treatment and feeding. A doctor will accompany the patient because of the severity of the injury.

Most of the other patients are of the routine variety—four hepatitis patients, an airman's Japanese wife inflicted with tuberculosis, a number of psychotics, a soldier with a compound fracture of the shoulder, a sailor with an intestinal disturbance, a military dependent with an infection of the liver, an expectant mother, and so on.

1100: Nurses Mocnik and Stankovitch carefully inspect their medical flight kits—sort of miniature hospital pharmacies. They contain all the drugs and medications nor-

mally found in a hospital ward. Special medication prescribed for any of the patients will be provided by the hospital, in this case Tripler. The two nurses order supplies to bring their kits up to full stock. They must make sure their kits contain everything needed—a drug not in the kit could cost a life, and there's no place to get it 17,000 feet above the Pacific.

1130: Nurses Mocnik and Stankovitch work out the loading plan. A plane carrying patients is simply a flying hospital ward. Each nurse must know where every patient is located. They are placed according to their diagnosis—those requiring the most care are placed within easy access, psychotic patients in restraint are loaded low in the tier of litters toward the rear, those with diseases requiring isolation are segregated. Ambulatory patients are transported in passenger seats forward.

1300: After a quick snack lunch, the medical team arrives on the flight line to meet the patients arriving from Tripler by bus and ambulance.

As they arrive Nurse Mocnik enters the buses and checks off each patient listed on the manifest and cross checks their patient identity tags. This tag, which stays with the patient during his entire journey to the U. S. hospital, contains such information as patient's name, rank, service number, diagnosis, classification, originating and destination hospitals, and treatment recommended during flight.

Nurse Stankovitch in the meantime is busy briefing the medical techs on the patients and special care required. She also briefs the flight crew on the patients, required flying altitude, and any other important information.

The "Stryker" is loaded first followed by the litter and then the ambulatory patients. As the patients come aboard, the medical techs, supervised by Nurse Stankovitch, place them in the pre-planned positions. Once all patients are aboard, they become the complete responsibility of the two flight nurses until they are taken off the plane at Travis.

1345: The medical team makes sure all patients are comfortable and secure, and checks its supplies and equipment again—medical kits, blankets, pillows, plasma, therapeutic oxygen bags, food, disposal bags, toilet articles, paperwork, and other routine materials. The aircraft engines start up.

1400: Wheels up and the giant C-121 climbs into the blue Hawaiian sky. As the pilot completes his climb-out to 17,000 feet—cruising altitude for the flight—the patients receive information on the trip and the time it will take—eight hours and 55 minutes. Estimated time of arrival (ETA) is 0255 local time at Travis.

During the next nine hours the medical flight team is kept busy tending its charges. Medication is administered as prescribed on each patient's identity tag, required temperatures are taken, bedding changed, reading material passed out, water and coffee to those requesting it, flight lunches distributed, reassuring conversation when needed, dressings changed, and reports filled out.

A watchful eye is kept on all psychotics. One mental patient getting out of hand could set off others and upset the entire plane. Most psychotics requiring it are sedated prior to coming on board the aircraft.

Special in-flight care of the "Stryker patient" is required and Nurses Mocnik and Stankovitch assist the doctor at regular intervals.

As the sun is left behind and darkness sets in, the flying "ward" is prepared for sleeping. The lights are dimmed and patients tucked in for the short night.

But the nurses don't get a chance to sleep, nor do the medical techs. There is always work to be done. One of the psychotics complains of a pain in his head, he wants a pill. Nurse Stankovitch gives him medication and in a few minutes he is asleep. A sailor complains that his foot hurts and Nurse Mocnik washes and bandages it. Nurse Stankovitch gives an injection to the "Stryker" and checks the traction mechanism. All this care and use of medication is entered on the identity tag so the next hospital will have a complete record of what has been done during flight. Hours slip by as the C-121 drones on.

The patients quiet down and sleep. Nurse Mocnik starts filling out some of the necessary report forms. A Patient Break-Down Report (off-load message) is made out. It contains information on the patients and is given to the pilot one hour before landing. He relays the information to Travis by radio.

0255: Touch down at Travis. As the aircraft taxis toward the flight line and the waiting hospital buses and ambulances, it is followed by an Air Force crash truck. This is standard procedure on all air evac flights. A crash truck stands by during loading, takeoff, landing, and off-loading.

0310: The aircraft hatch is opened, and the patients begin off-loading. They are checked off by the flight nurses, all medical records and identity tags turned over to the Travis hospital representatives, and personal effects collected. Once the patients are off-loaded the flight nurses' responsibility ends. They are then under the care of the receiving hospital.

0325: When the last patient is offloaded Nurses Mocnik and Stankovitch supervise removal of all medical equipment, and then head for quarters and some much needed rest.

0410: Lieutenants Mocnik and Stankovitch settle down to sleep. They have been going for 18 hours. After 15 hours' crew rest (the minimum time under regulations) they will board a MATS flight headed back to Hickham and a new mission.

The patients on the flight will receive a medical check, care, and treatment at the Travis hospital and then be transported to their destination hospital by the domestic system within hours. The "Stryker" will soon be on his way to Walter Reed Hospital for expert care.

This flight from Hickam to Travis—a distance of 2,042 miles—was completed successfully. Like most aeromedical evacuation flights, there weren't any major incidents. It was a routine flight. It was just one of many thousands

of "routine" flights carried out worldwide each year. Whether it is a flight carrying a polio victim or a soldier with a spinal cord injury, MATS aeromedical evacuation teams get them back home safe.

The mission of air evac may be simply stated: save lives. Every day of the year this mission is being carried out by hard-working skilled medical flight teams. During war, or peacetime, U. S. servicemen and their families can rest assured they are within hours of the best medical care the U. S. can provide.

The many Air Force and Navy flight nurses like 1st Lt. Rose Mocnik and Lt. Melva Stankovitch, and medical techs like A/1C Ted Easterbrook, A/2C Bobby Dean, and A/2C Ceferino Suarez, devoted to the care of their patients above all else—including the risk of their lives—make the medical flight teams of the aeromedical evacuation service truly "Angels With Silver Wings."

One difficult problem concerning the care of in-flight patients suffering with back injuries is that of providing constant traction. Currently this is accomplished by using weights, placed on a frame, which in turn are attached to a head-chin strap device. In this way pressure is applied which holds the patient's head firmly in place and keeps the spine in the proper position.

Under normal conditions this method works well. But one disadvantage is that in the event of extremely rough weather, or if the aircraft is forced to make an emergency or crash-landing, "G" loads exerted on the traction weights can cause sudden increase or decrease in traction pressure. This will naturally cause some discomfort to the patient and possibly cause additional damage.

Maj. Joseph M. Collins, commander of the 1453rd Aeromedical Evacuation Squadron, set about to solve this problem. In his spare time Collins spends his off hours developing new methods of improving in-flight care and comfort of patients.

Collins' idea took shape and he developed a simple traction mechanism, appropriately nicknamed the "Collins Device." It is a fairly simple device which might be compared somewhat to the workings of a fishing reel or torque wrench. The device is a reel and crank mechanism which is attached to the bed, litter, or Stryker frame. From this reel a metal wire runs to a pressure spring scale which in turn is hooked to the head-chin strap. To place a patient in traction the nurse simply cranks the reel until the proper traction pressure appears on the scale. The reel is then locked in place. Since the reel and patient are immobile and form a completely secure unit, any force exerted will not change the amount of traction pressure.

The proposal is currently under consideration and if tests prove successful, the Collins Device may soon be standard equipment with all aeromedical evacuation units.

In the Name of Congress . . .

Airdrop to Immortality

by M/Sgt. Hal Bamford

American aerial squadrons began arriving at the front in April 1918. By September they were becoming a major factor in the war's outcome and were assuming some of the roles which they play so well today. In 12 vital days between September 25 and October 6, aerial actions accounted for four Medals of Honor.

GREAT flashes of fire split the darkness of early morning. The thunder of barking artillery rolled across the countryside of France. The final offensive of World War I had opened.

For three hours huge guns rumbled their warning to German troops along the Meuse River and at 5:30 a.m., Allied doughboys went "over the top" in the Meuse-Argonne offensive.

The date was September 26, 1918. American might was to play a vital part in the closing chapter of the first great war of the 20th century—the war to make the world safe for democracy.

More than 800 aircraft had been amassed by the United States as its aerial contribution to the combined effort. American pilots were beginning to make their presence felt along the entire front. Just the day previous to the opening of this drive, Capt. Eddie Rickenbacker had scored the double win which was to bring him the Air Force's first Medal of Honor. Three days later, Lt. Frank Luke would win a second.

Their names have lived long and brightly as pioneers of a great tradition. However, a third Air Force officer, with an artilleryman companion, was also to emblazon his name on the roll of aerial greats before another week had elapsed after Luke's famed exploit. And then, for

some strange reason, Lt. Harold Ernest Goettler was to fade from memory, a forgotten name among the immortals of aviation history.

Planning for the final big push of World War I had reached its climax while Allied troops were engaged in the reduction of the St. Mihiel salient. No assurance could be had that these seasoned troops would be available for the initial stages of the last major offensive of the war.

As a result, several less experienced divisions were charged with bearing the responsibility of the first thrust. Among them was the now-famed 77th Statue of Liberty Division. To add to the woes of the Allied command staff were the difficult terrain, rugged woods, and two virtually unfordable streams which confronted the ground forces.

The attack moved off smoothly and then bogged down, a victim of stubborn German resistance and unyielding natural forces. Slowly it ground to a halt. Allied commanders sought new ways to get the giant drive back into motion.

Battle-proven troops from the now-eliminated St. Mihiel salient were thrown into the ground assault. And in the air, Brig. Gen. Billy Mitchel was called upon to crush the German "battle squadrons" which had been a vital factor in the slow down. Low-flying Air Force pursuits smashed at the battle squadrons with increasing success, loosening the defense and knocking holes in the stubborn German lines. Behind the lines, more than 200 Allied bombers, under command of General Mitchel and covered by 160 pursuits, mounted an assault on German reserves. In one devastating blow, they rained nearly 32 tons of bombs on the enemy; for the age, an attack of unheard of size.

The stalled giant once again began to roll toward the east and the German homeland as the offensive was reopened on October 4. Resistance was dogged, and small counteroffensives were mounted at isolated spots along the surging front.

In the Argonne Forest, troops of the 77th Division slammed forward through the thick trees until suddenly a part of the organization discovered itself completely cut off. Seven companies, six of the 308th Regiment and one of the 307th, were isolated from the remainder of the division.

Dubbed "The Lost Battalion," these troops found themselves hopelessly trapped. It would be several days before ground aid could arrive. Word was flashed to Allied headquarters and again General Mitchel was called upon to provide a solution. He turned to the nearest observation squadron. The existing situation was outlined. Would someone volunteer to attempt an aerial supply of vital materials to the encircled infantrymen?

Lt. Harold Goettler was the first to step forward, and the machinery for the first combat airdrop in history was placed in motion. The necessary supply items were quickly collected and packaged as Goettler prepared his DH-4 for the mission. The plane was already loaded and prepared for takeoff when a new problem arose. A second man, preferably one who could pinpoint the trapped troops, would be needed to aid in dropping the packages.

From the nearby 130th Field Artillery, Lt. Erwin Bleckley was dispatched to the airdrome while hasty adjustments were made in the aircraft's load. Rearrangements completed, the DH-4 departed on its dangerous mission. Low-level flight was a must since parachutes were not available for the drop articles. The lumbering DH-4, with its two passengers and precious cargo swooped in low over the trapped Americans and packages poured from the aircraft.

For a moment the stunned Germans stared in disbelief and, then, quickly recovering, they pumped a fusillade of ground fire at the relieving aircraft.

No one knows the number of passes Goettler made on that first trip. However, he returned the aircraft safely to his home base and reloaded for a second trip over the Argonne Forest.

The discussion in which these two men were undoubtedly engaged between flights must have centered on solutions to problems they faced on the initial try. Obviously, the first drop was not a complete success—why else would they plan to return? Probably volume was the principal reason. Possibly the altitude had been too great. Whatever the cause, the DH-4 with its two daring crewmen and precious cargo, returned for a second run, its altitude reduced from that of the prior attempt. This time the Germans were waiting. A withering fire greeted the approaching aircraft. Incendiary bullets were in wide use along the front and the DH-4 shuddered, rolled over, and plunged into the forest. Lieutenant Goettler died immediately; his companion became a second victim of this daring mission before help could arrive.

On the following day, Monday, October 7, 1918, "The Lost Battalion" was freed from the German pincers after five sleepless and harrowing days and nights. The offensive pressed on and slightly more than a month later Germany surrendered and halted the war in Europe.

It was 1922 before the Goettler-Bleckley exploit was duly recognized. Then, on War Department General Order 56, dual citations were issued.

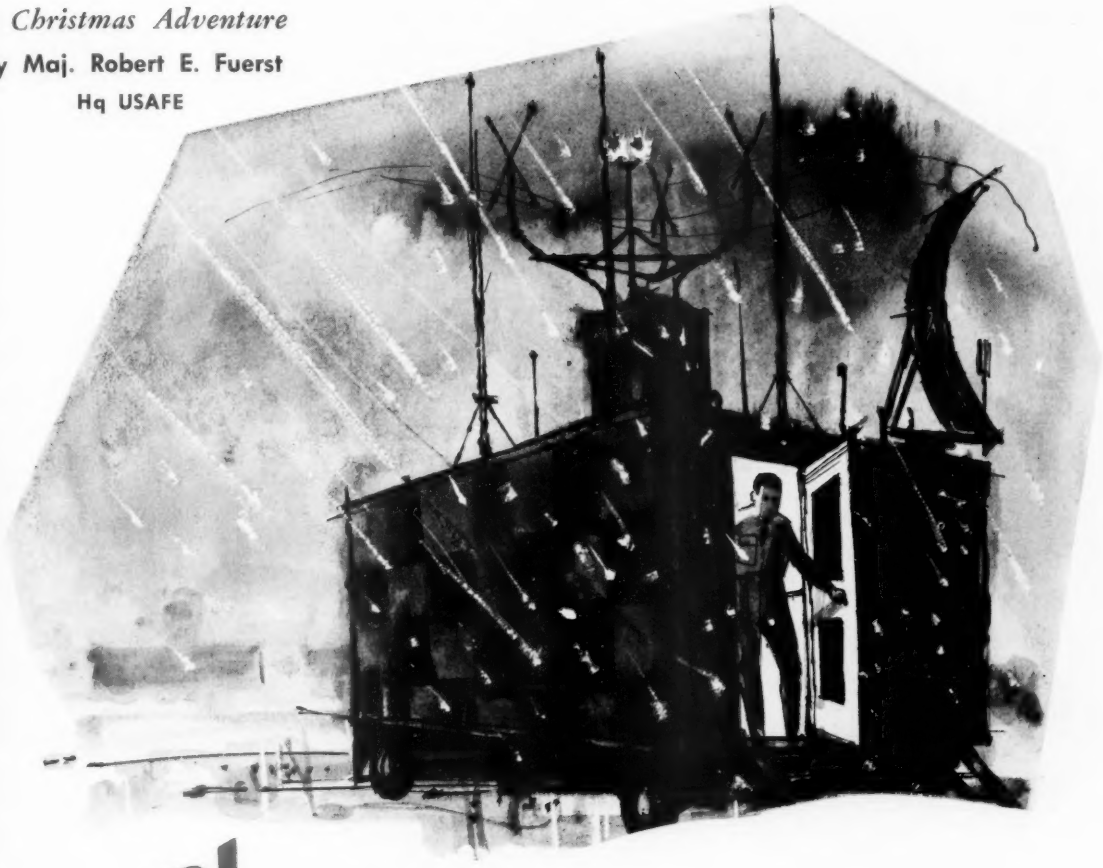
They read:

"Lieutenant Goettler, with his observer, Second Lt. Erwin R. Bleckley, 130th Field Artillery, left the airdrome late in the afternoon on their second trip to drop supplies to a battalion of the 77th Division which had been cut off by the enemy in the Argonne Forest. Having been subjected on the first trip to violent fire from the enemy, they attempted on the second trip to come still lower in order to get the packages even more precisely on the designated spot. In the course of this mission the plane was brought down by enemy rifle and machine-gun fire from the ground, resulting in the instant death of Lieutenant Goettler. In attempting and performing this mission Lieutenant Goettler showed the highest possible contempt of personal danger, devotion to duty, courage, and valor."

Posthumously, the Medal of Honor was awarded to Lt. Harold Ernest Goettler, 50th Aero Corps Observation Squadron, a native of Chicago, Ill., and to Lt. Erwin Bleckley, Wichita, Kans., for heroism displayed in the face of the enemy near Binarville, France, October 6, 1918. Strangely the official citation in Bleckley's name listed him as a member of the 50th Aero Squadron, despite the fact he was assigned to an artillery unit.

A Christmas Adventure

by Maj. Robert E. Fuerst
Hq USAFE



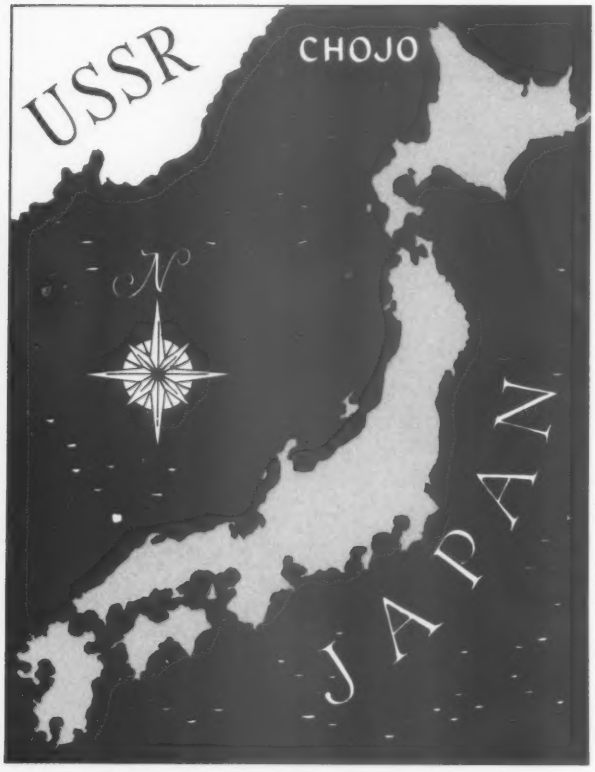
Christmas at Chojo

Editor's Note: *During 1956 the author served in Japan with the 1809th Airways and Air Communications Group, commanded by Col. Robert W. Dickerson. Under Dickerson's dynamic leadership, the 1809th became a spirited and efficient organization of the Far East and creditable performances by its men were common.* Christmas at Chojo *is a dramatized version of one such performance. The account is based on incidents that occurred during three GCA "saves" while Maj. Fuerst was with the 1809th.*

To all airmen serving lonely tours at isolated sites throughout the world this story is THE AIRMAN'S *way of saying Merry Christmas.*

IF you happen to be a pilot and check your navigation charts of the Far East, you will find that Chojo Air Base is the northernmost station operated by the United States Air Force in Japan. The word itself, *Chojo,* means *top,* and the field is as close to the top of the Japanese Islands as it can be without being overrun by Russians. And if you look into your radio facility chart you will see that Chojo Air Base has two navigation aids: a radio beacon (which is listed as "unreliable") and a GCA unit.

If you happen to land at Chojo, you will find further evidence of how remote a station it is. You will be forced to suffer the inconveniences of an outpost air base



—refuel your own airplane with gas from five-gallon cans, eat K-rations if you land after duty hours, draw your bedding from supply (no pillow), and make your bed on a cot in a barnlike hangar.

You might sense a different attitude among the troops, different from what you find at places nearer civilization. And if you look closely at the faces, at the expressions of these men at Chojo, you might notice a faint grimness.

Arizona Hawkins sat in the GCA van located beside Chojo's runway. It was Christmas Eve. A gloomy Christmas Eve, for it was dark and cold and he was at Chojo. It had snowed off and on most of the day, quitting just shortly before dark, and snow was piled high where the snowplows had pushed it.

But it wasn't the weather so much that made Chojo gloomy. Sure, a man could let himself think about the warm friendly days of Christmas time back home and get to feeling a little nostalgia, but a man didn't get morose about a thing like that. Or even about the whole setup, stuck at a miserable place like this. A man could stand almost anything for a year or so.

With one provision, thought Arizona, rising. A man needed companionship. Isolated like this, you needed companionship more than ever. You wanted friends, buddies to talk to and gripe with, and you wanted somebody to look up to you once in a while and tell you that you were doing the job.

But Sergeant Hawkins was new and it had not been easy to make friends here. He hadn't been accepted, yet. Nobody was at first. He had to prove himself. So tonight Arizona was lonely.

The phone rang and interrupted his thoughts. "GCA. Hawkins speaking."

"Well, I see who got stuck on the Christmas Eve shift—I should have guessed. This is Cutter at Ops. Captain Younger's due back in an hour and a half. At 2300."

"Roger." Arizona sketched a red "2300" on the glass scope with a grease-pencil and then said, "What do you mean by that crack, 'you should have guessed'?"

"If the shoe fits, wear it. I'll let you know if there are any changes in the flight plan."

"Okay." Arizona hung up and walked toward the door of the van. These guys were all the same. Even on Christmas Eve they had to needle you.

He opened the door and stepped outside. The weather forecast had been for clearing conditions tonight and on that basis Captain Younger had taken off on an emergency flight in the afternoon. Some guy at an isolated radar site had fallen off a wall and hurt his back and Younger had decided he could land a C-47 on a grass strip at the site and bring the injured man out. But it was a short landing strip and Younger, in order to keep his weight down, had taken off with barely enough fuel for the roundtrip. When he got back to Chojo there would be no gas to spare. It was important that the weather be good.

As he stood there, Arizona became conscious of the slow-falling snowflakes and frowned. He looked at the sky, looked in all directions, squinting as he tried to see. It was very dark.

Striding inside, he dialed weather. "This is Hawkins at GCA. What gives?"

"What do you mean, what gives?"

"It's snowing. I thought it was supposed to stay good."

"It was. Or at least we expected it to. But that front is backing up a little. It looks now like quite a bit of snow for the rest of the night. Should be a real white Christmas."

Arizona hesitated. "You know Captain Younger's due in here in about an hour."

"Is that right? I didn't know we had any traffic."

"We have him. He went on that mercy flight."

"Oh?"

"He'll be getting back here with practically empty tanks, so if the weather's loused up, he'll have to come in anyway. There's no other field he can go to."

"That's bad. I don't see how it can do anything but get worse here."

"How about keeping me posted?"

"Roger, will do."

Arizona broke the connection and then called the tower. "Hawkins at GCA. Any news on the inbound?"

"He's due at 2300."

"I heard that from Ops. Do you have contact with him?"

"Negative."

Arizona hung up and walked to a loud speaker and flicked a switch. He might as well monitor the tower, listening for any calls that came in. Across the room the phone rang and he hurried to it. "GCA. Hawkins here."

"This is weather. I have a special observation for you at 2215. Ceiling is 700, overcast, visibility one mile, heavy snow."

"Roger. GCA out." He hung up, shaking his head, and walked to the door to look outside again. It was snowing harder, thick wet flakes that cut visibility to practically nothing. Even now a man would have a rough time landing, and at the rate it was going, it would be still worse when the ship got in. You couldn't even see the runway lights and they were only a fraction of a mile away.

There was a crackling from the loudspeaker and Arizona bent to listen. It was the aircraft calling tower.

"Roger, Air Force 5878," answered the tower, "read you five by five. What is your present position?"

"We're about 75 miles out. Estimate Chojo in 30 minutes. Alert the medics. We have a patient on board with a seriously injured back."

"Roger, 5878, will do."

There was a pause and Arizona pulled a chair beside the speaker.

"Chojo tower from 5878," the ship called, "what is the present weather?"

"Chojo weather at 2215 is 700, overcast, visibility one mile, heavy snow."

Arizona could almost feel Captain Younger suck in his breath as he heard the report. "Roger," came the answer finally. "Five-eight-seven-eight out."

Arizona walked to the phone and called the tower. "I was listening," he said, "and I heard the info. Say, what's wrong with those weather people? That vis must surely be less than one mile—I can't even see the runway lights from the GCA van here."

"The runway lights are out. AIO is working on it now, but they're not sure what the trouble is yet."

"Oh, no!" Arizona sat down, frowning. "Don't they know a ship's due in here soon?"

"I guess so. Operations is supposed to be chasing down the electricians."

Arizona slammed the receiver down to break the connection and then called base operations. "Hawkins here at GCA. Is this Cutter?"

"Yeah."

"This is an emergency, Cutter. Captain Younger is due in at 2300, less than a half-hour from now. He'll be critically low on fuel and won't be able to go elsewhere. The runway lights are out, so we've got to get some lights for him."

Arizona paused for breath and then continued, "It's an emergency. Round up some guys and drive all our vehicles alongside the runway. Have 'em park there with their lights on. As many as you can get. And hurry!"

"Well," said Cutter, "maybe I ought to call the operations officer. Maybe he wouldn't . . ."

"Listen, Cutter," broke in Arizona, "there's no time to ask anybody. You *do* it, understand?"

"Okay, okay. I'll get right on it."

Arizona slapped the receiver back in place and headed for the radar equipment. He barely got across the room when the phone rang. It was the weather station once again.

"Special observation at 2230."

"Go ahead."

"It's down to 300 feet, overcast, and one mile in heavy snow." Wind northwest at eight."

"Roger."

Slowly Arizona put down the phone and returned to his equipment. He stood there, staring at it. Radar was a fascinating thing and in weather like this a man appreciated it. You could watch a thin flat blip from an airplane crawl across the screen just as if you were sitting before a TV set.

In snowy weather like tonight however, it could be bad. Heavy rain or snow sometimes was like a solid object to the radar, causing returns on the scope; and these might block out the returning "echo" of the airplane.

But so far it looked pretty good. There was the usual ground clutter and there were faint blobs that were weather returns, but nothing serious enough to interfere with the operation. Arizona crossed his fingers.

Things happened fast for the next 15 minutes at Chojo. Operations called to say that eight trucks were on each side of the runway with their lights on. Arizona couldn't see them, but that was explained when weather called and reported that conditions had deteriorated to zero-zero. Ceiling: zero. Visibility: zero. And then the mercy ship reached the area and made contact with him.

"Chojo GCA, Air Force 5878. Do you read? Over."

"Read you loud and clear, 5878. What is your position and altitude?"

"Roger, GCA. We're 20 miles northeast at 5,000 feet. What is the outlook on weather?"

"Descend to 3,000 feet and report when over Cocoa Jig beacon. Zero-zero weather conditions are expected to persist."

"Roger, GCA."

Arizona studied the scope. The C-47 was clearly visible to the northeast, and he sighted in relief. So far, so good.

"Over Cocoa Jig at 3,000, GCA."

"Roger, 5878, GCA has radar contact with you. Descend to 1,500 feet and turn to a heading of one-zero-zero degrees. This is your downwind leg."

"Roger. What is the status of runway lights?"

"Runway lights have not been repaired yet. Trucks are lined up at the side of the runway with their headlights turned on to assist you."

"Roger, understand. We have minimum fuel remaining, GCA. There will not be time for playing around. We must come in immediately."

"Roger, 5878, understand. Turn left now to a heading of zero-one-zero degrees. This is your base leg."

"Right."

Arizona watched the blip turn to the new heading. It

looked easy, watching it on the scope like this. But it was a touchy situation. Runway lights inoperative, the ship almost out of gas, zero-zero weather conditions—the odds were pretty slim. Arizona felt sympathy for this man caught in the darkness and faced with a do-or-die situation. He must be really sweating. Well, it would all be over soon, one way or the other.

"Turn left now to a heading of two-eight-zero degrees. This is your final approach."

"Roger."

Arizona shifted to the precision scope for the final. Normally a second man would be on with him and take over at this point, but today because of the holiday schedule he was on alone. And he didn't like the looks of it. The weather returns were growing increasingly solid and he had to strain to see the flat blip of the airplane.

"You are six miles from touchdown, 5878. Begin your letdown now."

It was getting harder to see, harder to make out the glowing mark that moved steadily over the surface of the scope. Then the return of the ship was engulfed by a huge blob and Arizona's throat grew dry as the plane disappeared. Now what?

Hurriedly he began making some adjustments on the set, but time was running out. Reluctantly he spoke into the mike. "Five-eight-seven-eight, pull up and continue on your present heading. I say again, pull up. Over."

"Roger, we're pulling up. What's wrong, GCA?"

"Weather returns were blocking out your aircraft and GCA could not paint you well enough to bring you in. The equipment has been adjusted and appears to be capable now of doing the job. Turn left to one-nine-zero degrees for a close-in approach."

"Roger, GCA. I'm beginning to pick up ice and am having difficulty maintaining altitude."

"Roger, 5878. Turn left now to one-zero-zero. This is your downwind leg."

Arizona felt the tenseness start to grow in him again. There was as much strain on him as there was on Captain Younger, he was sure, for he had now become equally responsible for getting the ship down. He was the pair of eyes, the X-ray eyes that could penetrate the darkness. And a bubble of fear pressed inside his chest and throat.

He brought the mercy ship around to final approach again and turned to the precision scope for the last short distance. Would weather returns mess things up again? Staring fixedly, he followed the blip on the last part of the run. Adjustments had helped and although faint weather returns were visible, he could still trace the descending C-47 and pinpoint its position.

"You are three miles from touchdown, on course, silghtly low on glide path. Decrease your rate of descent."

The weather was still zero-zero. He wondered how the trucks would work for runway lights. In weather like this would a pilot be able to make them out?

"One mile from touchdown. Altitude good. Slightly right of course. Turn left three degrees to a new heading of two-seven-seven degrees."

Time was growing short. It would soon be over. Was he slipping too low again? Don't now. Don't mess up when it's almost over.

"You're slightly low on glide path. Decrease your rate of descent. You're approaching the end of the runway. Still slightly low. Bring it up. You're over the end of the runway. You're at touchdown point."

Arizona held his breath, listening. The blip of the airplane had merged with the ground line and Captain Younger should be down. He walked to the door, but still could see nothing. Had something happened at the last moment?

"And then abruptly a call broke the silence.

"GCA from 5878. Over."

"GCA here. Go ahead."

"Roger, GCA. We're on the ground. Good work. Who's on duty out there?"

"Sergeant Hawkins, sir."

"Roger. Five-eight-seven-eight out."

Arizona sank to the chair. It was over. The ship had been saved. And a seriously injured man had been rescued. And Captain Younger was grateful. Of course he had clammed up as soon as he heard the name "Hawkins," but you couldn't expect everything. Still, it would have been nice . . .

Glancing at the clock, Arizona collected his things and made ready to go. It was midnight, time for the shift change. Also it was Christmas. He had almost forgotten.

A jeep pulled up and Arizona picked up his bundle. The door opened and a half-dozen men trooped in, headed by Captain Younger.

"Sergeant Hawkins," he said, "you did a real job tonight and I want you to join us. We're having a little something up at the dining hall." He paused and extended his hand. "Thanks, Hawkins. And Merry Christmas."

Arizona felt moisture in the corners of his eyes and blinked rapidly. Strange how that unfriendly look seemed to have disappeared from everyone's face.

He shook Captain Younger's hand and said, "Thanks, Captain. And Merry Christmas to you too."

THEY OUTSMART DEATH

When everyone else moves out, the EOD boys move in.

by Capt. Ted R. Sturm

"IT'S another head," the sergeant called to the two men behind him. Crouched precariously in a tangle of snow-covered underbrush, he twisted his body to ease an ice pick-like tool from his parka pocket.

To the watching airmen, the ominous shadow wedged in the icy branches took on a dull, metallic glint as the sergeant backed it out with all the care of an operating brain surgeon. Occasionally he stopped to take a deep breath and hook a finger around beads of perspiration which, despite the cold, persisted in popping out on his forehead.

The faces of the men where impassive. As the "head" was inched outward, seconds extended into eternity. A wrong move now, and one-and-a-half pounds of high explosive could blow the men to bits.

The "head" was the business end of one of a hundred and four 2.75-inch aircraft rockets which had suddenly interposed a deadly element in the flora and fauna of Lily Baker's woodlands in Aroostock County, Maine. Sower of the undesired crop was an Air Force F-89D *Scorpion* which had crashed January 18, 1957.

Knocking down trees over a 10,000 square-yards area and strewing hot wreckage and rockets over another 190,000, the *Scorpion* created a veritable no-man's land of Mrs. Baker's property. The sergeant in the underbrush and seven other

men of Detachment 6, 2700th Explosive Ordnance Disposal Group (EOD) were cleaning up the mess.

As the sergeant delicately grasped the rocket, as though it were the head of a cobra, his foot slipped. The two men started forward instinctively, as though mere reflexive action could in some mysterious way forestall the apparent doom. But the sergeant caught himself. He grinned at his companions.

"Only 103 more to go," he said.

It was a touchy job, hampered by a layer of several inches of snow over ground frozen to a depth of 14 inches. The trees knocked down by the aircraft were tangled and frozen together. While winch cables snapped in the cold, and lurking rocket heads threatened from secret hiding places, the EOD men worked steadily until they had cleared 22 warheads and seven rocket motors from the icy debris. But then the detachment commander, Capt. Thaddeus Stachowski, called a temporary halt.

"It is recommended that as soon as the snow is off the ground, this operation be resumed," he said in his report to headquarters. So with that, Detachment 6 roped off the danger area until spring.

The Maine incident, seemingly fraught with all the dangers of actual combat, was merely another routine job handled by one of many detachments of a hardy breed of Air Force specialists who never have to back up to a pay table, even though they draw hazardous duty pay, since every cent is well earned.

They are the munitions disposal specialists and technicians, AFSC 46131/71. This foreboding title means that whenever an explosive device creates a hazard, these men descend upon the scene to take the punch out of it. Always, they are pitting their brains and skills against inanimate lethality.

The EOD people assigned to the 2700th EOD Group, Hill AFB, Utah, are organized into three squadrons. One is located at Hill, another at Wright-Patterson AFB, Ohio, and the third—a relative newcomer—at Tachikawa AB, Japan. A squadron has four to six detachments, each strategically located throughout the ZI and the Far East at a "home" base, but ranging over its area of responsibility wherever and whenever a call comes in. Captain Stachowski's detachment, for example, is attached to Griffiss AFB, N. Y.

In addition to the 2700th, there is an EOD squadron located in Europe, assigned directly to USAFE. It is the 7410th which, through its 11 detachments, handles the vast area of Europe and North Africa.

But not all EOD men are assigned to special squadrons. Most bases have an emergency element of three or four people, who handle many of the jobs that occasionally pop up. If they hit something too big, they can call on the 2700th for help.

The 2700th with all its units is under the technical direction of the Ogden Air Materiel Area's Air Munitions Directorate, also located at Hill AFB.

The Maine job, although big, was clear-cut. Some of them don't fall into this category. A California incident last July involved a double-headed game of hide-and-seek with the men of the 2701st EOD Squadron, McClellan AFB, vs. two guided aircraft rockets.

One of Our Rockets Is Missing

M/Sgt. Jacob H. Latimer, Detachment 4, first got wind of the incident on Tuesday, July 8. Two 155-pound GARs had been accidentally dropped in Lodi County from a tightly turning Hamilton AFB F-104 *Starfighter*. Sergeant Latimer and his assistant, T/Sgt. Bernald Honaker, had just finished one job at Travis AFB where they were awaiting transportation home to McClellan. Travis' air rescue unit got the word on the GARs. Climbing aboard a helicopter, the two sergeants began an adventure that would run most of the month, cover two counties, and end up at the bottom of a 14-foot hole in the ground.

The main problem here was finding the rockets. After a two-hour search that Tuesday, the helicopter returned to Travis for repairs and the EOD men went back to McClellan. Meanwhile, Hamilton AFB took over the search, releasing the story to the public in the hope that somebody might have seen the rockets fall.

While Hamilton crews searched, Latimer and Honaker handled a couple of extra jobs on the side, and then on

Friday they heard that one of the rockets had been located. All Latimer and Honaker had to do was recover the deadly little beast.

As Latimer described it later, the digging was in solid clay, and only the hole in the ground indicated where the rocket had entered.

". . . it was recovered at 0100 hours, Saturday, July 12," he reported. "The contact fuze was so battered that it was decided to destroy the missile by detonation. It was done at 1215, July 12."

But the other rocket was still missing!

By the 18th of July, Hamilton search crews had still not turned up the missing GAR. It lay somewhere in Yolo County, and Latimer's boss, Maj. Albert I. Fisher, 2700th EOD Group Operations Officer, decided to initiate an independent search. Using geodetic maps and a lensatic compass, they plotted a course of 330 degrees—parallel with the entry angle of the first GAR. Matching this with the flight path and speed of the aircraft, the men determined that the offending F-104 could not have completed its turn until it had traveled 20 or more miles. This narrowed the search area considerably. Meanwhile, falling object reports from a Mrs. Leland Hayes and a Roy Gorman coincided with the area of probability as plotted by the EOD men. On the afternoon of July 22, the men found a possible hole of entry on Mrs. Hayes' property. Close examination revealed that the rocket had indeed penetrated here. The next question was how far?

Pieces of the rocket motor, launching rail, and guidance section were discovered just below the entrance of the hole which measured 34 inches in diameter. For the next four days the men dug, experiencing cave-ins and water seepage which prolonged the task. Finally, after digging and building a wooden shaft 14 feet into the earth, they exposed the rocket motor and the warhead.

In the words of Sergeant Latimer, "the contact fuze resembled a piece of metal having been hit with a 10-pound sledge hammer." Instead of risking a bumpy truck trip with the deadly object, they detonated the rocket where it was.

In terms of manpower and equipment, this was a relatively small—if somewhat exasperating—job. Not so the case of the Vandenberg AFB, Calif., project which took 15 men and nearly two months. On this king-sized enterprise, which got underway in March of last year, men of Detachments 2, 3, 6, and 9 cleared the former Army firing range of enough explosives to wage a small war.

The crews disposed of 536 pieces of hazardous ordnance, including high explosive and white phosphorous rockets, rifle and fragmentation grenades, 37 and 105 mm. artillery ammunition, nitro-starch blocks, assorted small arms ammunition, blasting caps, 2.47 mm. experimental rockets, 60 and 81 mm. mortar ammunition, ground signals, trip flares, and anti-tank mines. Surprisingly enough, there were no personnel injuries resulting from this mammoth disposal job.

To understand how these men can regularly and literally "play with fire" and still maintain a record which boasts no serious injuries since the organization was formed in 1952, it is necessary to know from where they come and how they are trained.

As may well be suspected, each man is a volunteer in the truest sense of the word. He volunteers for the training and duty and can withdraw upon request at any time. To face the realities of this unusual and essential career field, however, it must be said that manning has always posed its own special problems.

Currently, the field is roughly 62 percent manned; a figure which varies only slightly through the years. Maj. Jay H. Williams, chief of the USAF's maintenance engineering manning section, expressed a view on this subject. This was corroborated by Lt. Col. James P. Lappin, Deputy Chief, Armament & Electronics Division, DCS/M, Hq USAF.

"We are sure that our airmen are reluctant to enter this career field because of the seemingly obvious—and often dramatized—idea that life expectancy is short. How can you tell somebody that it's safe to disarm a bomb that simply through its passive but potentially disastrous presence can cause the evacuation of an entire air base? People laugh at you."

And Lt. Col. Robert F. Douglas, who recently assumed command of the 2700th, agreed with the headquarter's viewpoint.

"But," he hastened to add, "the people we have we usually keep. A few quit, but mainly because of family pressures resulting from this exaggerated idea of danger. Our record repudiates this concept.

"Further, we are an expanding organization and therefore suffer personnel shortages. Normal attrition also leans our ranks. I think if more airmen knew about our work, the call of adventure would have many of them knocking at the door."

Of course, the amazing safety record of the EOD group didn't "just grow." It was spawned by a highly effective and thoroughly competent training program.

Indian Head to War Head

Airmen in surplus career fields who want a little more adventure than they find in an office can volunteer for EOD training. From attendance and graduation from the Ammunition Supply School at Lowry AFB, Colo., to completion of the EOD school at Indian Head, Md., the poten-

tial specialists work and study through 33 weeks of concentrated training.

The school at Indian Head belongs to the U. S. Navy, but serves as the training agency for explosive ordnance technicians of all services. Handling the Air Force students is the 3429th Technical Training Squadron, a small outfit directly under Lowry AFB, Colo. This squadron, commanded by Capt. William Laurier, is staffed by 10 instructors—two officers, two warrant officers, and six NCOs.

To get into this school, a man must be a munitions specialist at the five level. This means most students have attended the munitions course at Lowry, and have spent some time in the field. The exception to this rule is the retraining people; men from other surplus fields who can go directly to Indian Head from Lowry.

At first glance, the curriculum at the school would curl the scalp of a bald-headed gladiator. From the very first the student is imbued with the purpose of his existence—to evaluate, recover, and dispose of every conceivable type of explosive ordnance, both foreign and domestic. How do EOD men do this?

There is a cardinal rule and an inflexible procedure. By the numbers a man (1) recognizes or identifies the ordnance, (2) applies the proper safeties and precautions, (3) renders the item safe, and (4) disposes of it.

Lest the uninformed think this routine, they may well bear in mind that even one mistake in any phase of this procedure is usually the last. It is a serious, deadly business.

Take the recognition and identification problem, which EOD men claim is the most crucial phase of the operation. With the uncounted thousands of varieties of death-dealing instruments man has created, it is virtually impossible to memorize them like one would a tech manual. So the school groups them in three broad categories with dozens of subcategories.

Special weapons is a special course involving nuclear explosives. All the EOD men take it. For six weeks they study the highly classified intricacies of nuclear weapons. When at last the training is over, the men have developed a kinship and camaraderie unequalled among any group of men with a common specialty. They don't say goodbye as they leave the school, because at 18-month to three-year intervals they return for refresher training.

Asked if the thorough training the EOD men receive builds in enough self-confidence to eliminate fear on a touchy project, Captain Laurier grinned wryly.

"You never eliminate it. You simply learn to control it."

About Nuclear Weapons

It's usually a short road from Indian Head to a hot warhead, and with the training completed the EOD men sally forth.

Not long ago the nine-man team from Olmsted AFB, Pa., was flown to the scene of the highly publicized *South Carolina Incident*.

The once-in-a-million happenstance of an inadvertently dropped A-bomb had the population in a state of anxiety and alarm. But the EOD team sniffed with geiger counters and other devices, discovered no radiation, and cleaned the debris up in short order. There was little chance of a nuclear detonation because the essential component would not have been inserted by the plane's crew until it meant business. Conventional explosives, used with the nuclear device, had nonetheless blown a fair-sized hole in the ground, unfortunately injured a man and his family, and wrecked his house.

EOD people have flown in aircraft ranging in size from small liaison craft to huge C-124 *Globemasters*. They have covered the vast expanse of the Pacific and Atlantic oceans, Africa and the Middle East; in addition to their primary duties they have cleared surplus USAF bombing and gunnery ranges, dearmed grenades found by children, been called by civilian authorities to render safe various ordnance items found in cellars, attics, closets, train wrecks, reservoirs, the desert, beaches, and in backyards.

On several occasions they have removed and dearmed Civil War cannon balls which were loaded with dangerous black powder bursters. And recently, they have assumed the responsibility of pacifying any guided missiles which may become a hazard to the public or to military establishments.

During World War II, most of the bomb disposal work was performed by the Navy, Marines, and Army Corps of Engineers. It wasn't until the Korean conflict that the Air Force recognized the need for its own capability and in May of 1952 organized the first EOD squadron. In operations everywhere, however, the EOD people of all the services work with a high degree of cooperation and coordination.

EOD men are a special breed. Caution is more important than fearlessness. As Colonel Douglas said, "We'll get rid of a man quicker for being foolhardy than for being overcautious."

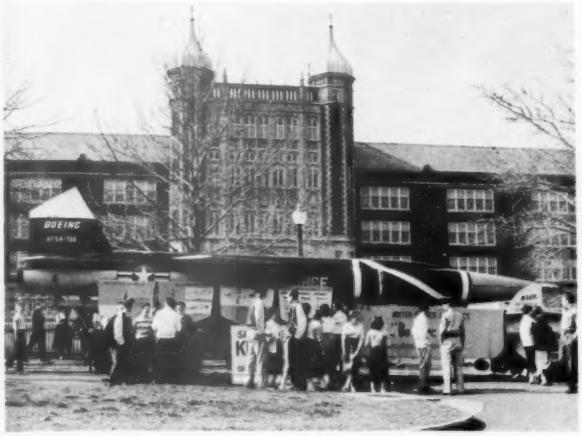
The 2700th maintains a proficiency program which requires all EOD people to perform actual ammunition disposal duties in training exercises. Once a year when the group holds a recurrent capability test for all EOD detachments, the salt flats of Wendover, Utah, assume the appearance of a live battlefield.

Each unit spends one week on the desert, performing such hair-raising tasks as neutralizing all types of ammuniton and blowing up bombs ranging from a 20-pound frag to a 500-pound GP.

Getting into this work is no major problem providing an individual can stand the soul searching appraisal that looks deep within him. The recipe adds up something like this: a liberal portion of caution, a sharp mind for mathematics and science, a full measure of emotional stability, and a dash of daring for seasoning.

TRAVELING SALESMEN

Have Vocational Guidance Program: Will Travel



Drawings and descriptions mounted with this *Bomarc* help explain the missile's use and operation to student groups.

How many factors must the modern teen-ager consider in arriving at the most important decision of his lifetime, the choice of a career? In a world complicated by a variety of hitherto unknown forces, the measure of values established by other generations offers little help in making the selection. "Following in Father's footsteps" is no longer a tried and reliable guide as the age of technology more and more eloquently voices the demand for scientists, engineers, and skilled technicians. At no point in history has expert vocational guidance played a more important role in preparing tomorrow's citizens for the tasks and responsibilities they must assume.

In the area of airpower and allied avenues of endeavor, a portion of this vital career guidance is provided by the Air Age Education Program conducted by the USAF Orientation Group at Wright-Patterson AFB, Ohio, in conjunction with Kiwanis International and the Aircraft Industries Association.

The program was inaugurated in early 1957 when the three agencies joined forces to lay the groundwork for a series of Air Age Education tours. Designed to carry the message of airpower into the classrooms of high-school students around the country, the tours also emphasize the need of higher education in today's technical world.

As the Air Force's official exhibit unit, the Orientation Group prepares mobile displays of modern aeronautical equipment, including jet aircraft and their engines, the *Bomarc* and other missiles, electronic gear, helicopters, and other items explaining the position and function of each in the airpower picture.

Aircraft Industries Association, representing all leading corporations connected with American aviation, provides authoritative speakers on a variety of topics to accompany the displays on their visits to schools. In addition to technical qualifications in their respective fields, these speakers—as a result of experience with the program—are equipped to cope with the strange queries which sometimes emanate from the minds of teen-agers.

Kiwanis International, through its local chapters, makes all arrangements with host communities, and the enthusiastic support of these local groups is a major factor contributing to the success of the program.

The first tour departed from Wright-Patterson AFB, in 13 vehicles loaded with equipment, and covered more than 8,000 miles bringing the airpower story to 52 cities in seven southeastern states. On this first tour alone more than 62,000 students viewed the exhibits and attended lecture presentations. More than 220,000 parents and other civilian citizens visited the outdoor displays arranged for the public in each community.

This initial tour of the southeastern states was followed by similar expeditions into New England and the Middle West. The fourth tour conducted in October and November of 1958 extended as far west as Iowa and the Dakotas.

A typical visit to one of the host cities includes in its schedule four 50-minute assembly programs each day dur-

Inside a van an aircraft powerplant specialist provides technical data to students who may be tomorrow's engineers.

ing the five-day week and a public display of exhibits daily at some central location. The assembly program for students includes a discussion of the importance of higher education to national survival which is sometimes punctuated by practical demonstrations of recent technological advances. Films such as Walt Disney's ever-popular "Man in Space" are received with enthusiasm by youngsters everywhere.

It is difficult to measure the merit of the Air Age Education Program in tangible terms since the passage of a certain period of time is required between planting the seed of inspiration and reaping the harvest. But the enthusiastic acclaim accorded the program by students, teachers, and civic leaders provides a good barometer indicating its promise. In more ways than one American security for the future may depend on keeping the airpower show on the road.

SLANTS ON SPACE

/// A part-time astronomer, Johannes Hevelius (1611-87), a city councilor of Danzig, produced the first reasonably accurate map of the Moon in 1647. For the necessary observations, he built an observatory atop his residence and equipped it with the finest instruments then available. Although his engraving for reproducing the map has been lost, some copies of the chart still survive as collectors' items. Hevelius decided to name lunar features after terrestrial ones, ranging from volcanoes to major bodies of water. However, only half a dozen of the place names he bestowed remain in use.

Four years after the publication of the Hevelius map which depicted the Moon on a scale that made its projected diameter a little less than a foot, a map with a much better nomenclature system was produced by the Rev. G. B. Riccioli, a Jesuit astronomer (1598-1671). He named virtually all the major craters in the honor of noted scientists and philosophers, ringing in a few famous historical figures of antiquity as well as mythological characters. Riccioli's scientific modesty is suspect in the eyes of some writers since he blandly named one of the biggest, a deep scar 120 miles in diameter, Grimaldi for his pupil, Rev. Francesco Maria Grimaldi (1618-1663), Italian physicist upon whose observations the map was based. Moreover Riccioli assigned his own name to a neighboring crater whose 100-mile length compares favorably with other scars of major league dimensions on this natural satellite. Both are located close to the Moon's equator and very near the outmost edge of the visible lunar face, an area scientifically known as the "limb" for all celestial objects in the solar system.

It was Riccioli who also devised the system of imaginative names for the many waterless "seas" or *maria,* together with calling mountainous lunar terrain and peaks after prominent features of terrain in the then known world. In all he named more than 200 of the most prominent parts of lunar topography and virtually all are still in scientific use. Some 500 additional features have since been added, but the distinguished astronomers of subsequent years have had to be content in being memoralized by the less spectacular, small economy-sized craters; Riccioli had seen to it that all the king-sized variety were distributed among the scientists he esteemed, with the rare historical and mythological exceptions noted.

/ / /

/// Since lunar probe operations will be holding popular attention and making the headlines in the coming months, it is a wise airman who will latch onto a copy of *Introduction to the Moon,* by Dr. Dinsmore Alter, until recently Director of California's Griffith Observatory. A small, paperback book that will fit flat into a tunic pocket, it manages in the short span of 108 pages to accomplish the mission its title sets forth and it does so in an interesting, easy-to-read manner. This lunar manual has been hailed as a valuable acquisition for anyone, "from beginners to dyed-in-the-wool selenographers."

In scientific excellence, it rates both high and up-to-the-minute and is considered superior in quite a few respects to many longer works recently appearing on the market with price tags of $10 and up. *Introduction to the Moon* costs only $1.65. For illustrations it is a cool bargain, offering a magnificent series of 62 lunar photographs. Particularly valuable to the layman novice is a double-page locator chart which lists all the placenames of lunar terrain features mentioned in the book, together with coordinates for finding them on the accompanying photography. Thus the work is entirely self-contained and may be read without reference to other books or charts.

Dr. Alter describes the character of the various formations which make up lunar topography, theories on their origins and properties, besides devoting chapters to the history of selenography, the Moon as a tidal factor, and the potential uses of an observatory on its face. Copies may be obtained by writing Griffith Observatory, P. O. Box 27787, Los Angeles 27, Calif., and remitting the price of the book. It's a bargain and if you have youngsters of high school age you'll be surprised that they'll find it as fascinating as their old man.

/ / /

/// Anyone interested in observing artificial satellites can now make his hobby a lot easier to enjoy. The National Academy of Sciences has just published for such an audience a do-it-yourself manual which gives a simplified method for predicting the courses of these manmade moons so that a person can figure out where to look for a satellite in any given locality on Earth. Predictions computed on the basis of the manual will be reliable in many cases for periods of a week or longer. Data on which the computations are based include such elements as inclination of the satellite's orbit plane to the Earth's equator and the distance to the center of the Earth at the perigee, or low point of orbit—information which IGY disseminates publicly on each satellite. A person need be no great mathematical egghead to utilize the formula; it requires no operation more complicated than simple long division. In this connection, note may be taken that in at least one instance the first to plot accurately the course of an early satellite was a 14-year-old New Jersey high school girl on a Moonwatch team who relied on mental arithmetic in making her calculations. The new manual, *Simplified Satellite Prediction from Modified Orbital Elements,* is available for one dollar from the Publications Office, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington 25, D. C.

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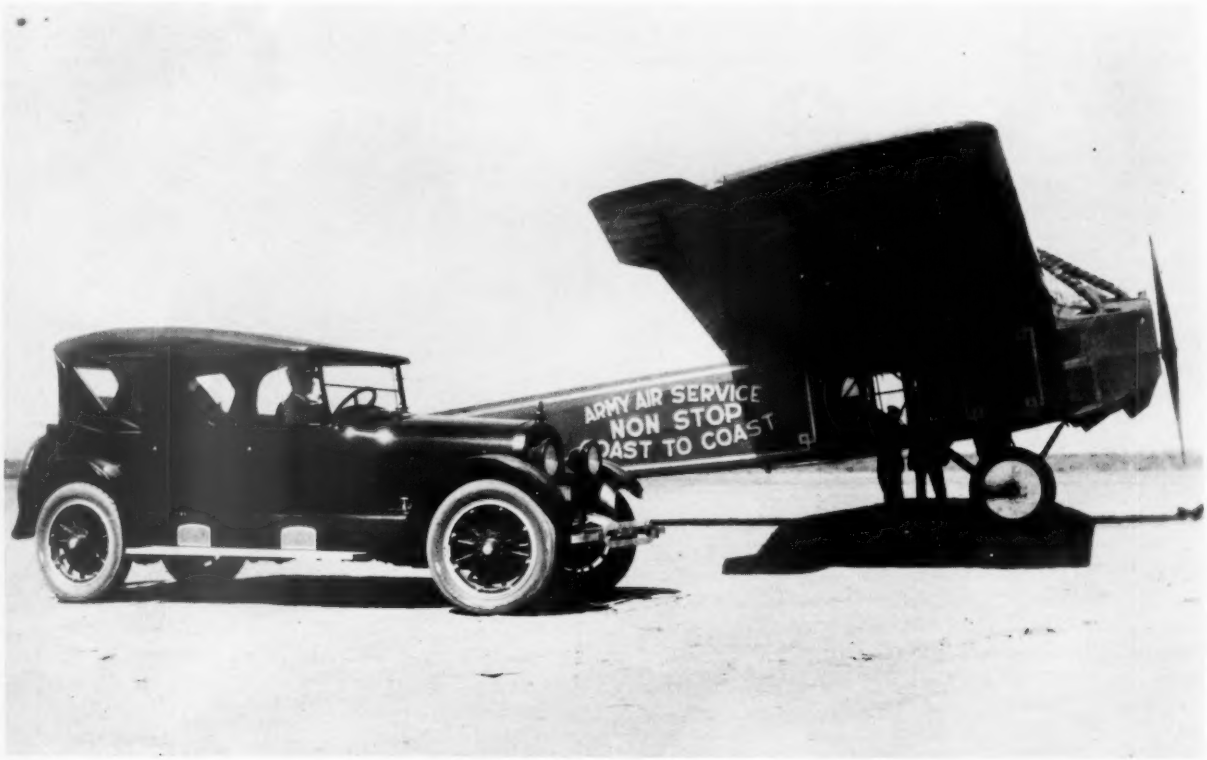
/// Airmen interested in getting with the growing sky-study hobby can equip themselves at bargain prices with telescopes, aerial camera lenses, and binoculars by shopping around war surplus stores. Some instruments are being offered at prices less than one-tenth what they originally cost Uncle Sugar. —WILLIAM A. KINNEY

No one had ever flown nonstop across the American continent. Two Air Service pilots decided to do something about it, and

THEY HEDGE-HOPPED TO GLORY

by T/Sgt. Harold L. Craven
Airman Staff



In November 1911, while many Americans were making the transition from horse and buggy to horseless carriage, Cal Rogers crossed the United States in a flying machine. He started at New York, accompanied by a special train which carried spare parts. More than a month later, after crashing 15 times and rebuilding his airplane four times, he reached his goal, Long Beach, Calif.

To many skeptics the historic flight had been significant. It was conclusive evidence that airplanes were dangerous and impractical and that aviators were nuts.

Less than a decade after that crash-studded flight, Air Service pilot Lt. Bill Coney flew from San Diego, Calif., to Jacksonville, Fla., in the record flying time of 22 hours and 30 minutes. In September 1922 Lt. Jimmie Doolittle became the first person to complete all legs of a transcontinental flight in a single day. His total flight time from Florida's Pablo Beach to Rockwell Field, San Diego, had been 21 hours and 20 minutes. So far, however, no one had ever made a nonstop transcontinental hop.

At Rockwell Field, San Diego, Air Service Lts. John A. Macready and Oakley G. Kelly were preparing to make such a flight.

Their craft was a *Fokker* T-2 monoplane, originally built for transport service but now extensively modified. It had two additional fuel tanks, a booster radiator for the

liquid-cooled Liberty engine, an access tunnel between the fuselage passenger cabin and the open-cockpit pilot's compartment alongside the engine, and a second set of controls and a duplicate instrument panel in the passenger compartment.

By 1922 standards it was a huge plane. Its wingspan was 75 feet and its length 49 feet. It was said to be capable of getting off the ground, fully loaded, with a one-mile run, and reputedly could climb 4,000 feet during the first hour of flight. Top speed was rated at 75 to 110 miles per hour, depending upon payload.

On October 5, 1922, Kelly and Macready, armed with beef sandwiches, broth, and coffee, climbed aboard for a nonstop flight to New York. The T-2 performed well on takeoff, climbed at a satisfactory rate, but ran into fog in Southern California's mountains. The aviators returned to San Diego, but instead of landing immediately they stayed aloft 35 hours, 18 minutes, and 30 seconds, thereby shattering all existing records for continuous flight.

The pilots wanted to try again, but weather delayed them for more than a month. At 9 p.m. on November 3 the Weather Bureau advised Kelly that conditions were favorable for a takeoff on the following morning. Kelly sent a messenger to the San Diego University Club where Macready was making an address, and soon the two men were busily making preparations for the flight. They got to bed after midnight and were awakened at 3:30 to go to the airfield.

At Rockwell Field, before daybreak, the plane was fueled and ready. At 5:45 a.m. there was enough light for takeoff and at 5:57 a.m. they were airborne with Kelly at the controls.

The T-2 climbed better than Kelly had expected. He had little difficulty getting it over Temecula Pass and the higher mountains south of Banning. He passed the Salton Sea at 2,000 feet and headed east toward the Colorado River, where Macready took the controls. After crossing the Gila River, Macready followed the Southern Pacific Railroad toward Tuscon, Ariz.

Flying became difficult and dangerous in the mountains near Yuma. The T-2 was near its absolute ceiling and the air was rough. Air currents would lift it or lower it a hundred feet or more at a time and the pilots expected to be dashed against mountain peaks.

At Deming, N. Mex., the plane had an altitude of 5,200 feet and would go no higher. A few hours ahead were 6,800-foot mountains. The only way to get over them would be to burn enough fuel to lighten the plane, but this would reduce their chances of reaching New York. Kelly took the controls at Deming and attempted to follow the planned course. A half hour later he diverted from his route and headed up a valley which took him across salt marshes and lava beds. As each gallon of fuel was burned altitude was gained, and the T-2 had 150 feet to spare when it reached the divide near Tecolete, N. Mex. Suddenly a downdraft dashed the plane toward the ground, leaving it in a near-stall position a few feet above the shrubbery. Somehow Kelly averted a crash, but he was still on the westward side of the divide. He maneuvered the plane around and flew back down the slope some 10 miles while trying to gain altitude and burn up fuel. In 20 minutes he tried again, without success. He burned up more fuel and made a third attempt, this time crossing the divide with 30 feet to spare.

The crossing had consumed time and fuel. Additionally, the engine was losing water through a cracked cylinder jacket. Night was closing in and a partial cloud covering obscured the moon. Kelly tried to follow the railroad by flying close to the ground, but the tracks soon became lost in darkness. Eventually he saw the lights of Tucumcari, N. Mex., where he relocated the railroad when moonlight occasionally penetrated the cloud cover.

Lieutenants John A. Macready and Oakley G. Kelly, pilots in first nonstop flight across the American continent, and their Fokker T-2 monoplane.

Macready relieved Kelly at the controls. A heavy crosswind caused considerable drift and the clouds lowered, eventually coming so close that the T-2 was flown through them instead of under them. Visual contact with the railroad was now impossible, and Macready flew by compass, estimating drift when the bright headlights of a train would appear and give the location of the tracks. Now there was rain, lightning, and thunder, as a tornado swept close to their route.

Bad weather passed and at Pratt, Kans., the T-2 left the railroad and was navigated by compass throughout the night. Eventually the light of St. Louis appeared. During the night the plane had flown over parts of six states,

New Mexico, Texas, Oklahoma, Kansas, Missouri, and Illinois.

A short distance beyond Terre Haute, when Macready was again scheduled to take the controls, Kelly observed that the loss of water through several cracked cylinder jackets would probably necessitate a forced landing. Macready crawled through the tunnel to the cockpit, took one look at the water streaming from both sides of the engine, and agreed that reaching New York was impossible.

Fifty miles west of Indianapolis engine temperature climbed rapidly. Kelly, now in the plane's cabin, poured coffee and beef broth into the radiator and it appeared they could reach the Indianapolis Speedway for a landing. At Indianapolis he decided to push on to Schoen Field, Fort Benjamin Harrison, Ind., where better facilities were available. He throttled the overheated engine partially and began his descent. Upon reaching the Army post he circled once to get into landing position, his propeller turning slowly. Just before the T-2 reached the edge of the field he pulled the throttle back and the propeller stopped, frozen fast by the heat of the engine, and a cloud of steam enveloped the plane as it rolled to a stop a few seconds later.

In six months, the dauntless aviators were ready to try again, this time in an east-west direction to avoid climbing western mountain peaks with heavily-loaded fuel tanks. By starting at New York they would burn less fuel at the start of the trip and this would allow them to shorten their route by 400 miles. They could steer a straight course for Las Vegas. At that point the fuel load would be light enough to make the climb over the mountains to San Diego.

Early in the afternoon on May 2, 1923, they departed Mitchel Field, their rebuilt Liberty engine running smoothly. Spectators wondered if the heavily-loaded T-2 would get off the ground successfully.

Kelly and Macready wondered too. Kelly was at the controls and Macready was sweating it out in the passenger compartment.

"The old girl lumbered across the field for what seemed like miles and finally lifted herself off, clearing the hangars by what seemed like inches," Macready said later.

"I had made up my mind that there wasn't a chance of our getting away and was hoping that Kelly would be able to take her over to the salt marshes along the edge of Long Island where we might possibly get away with a safe landing. We scraped along housetops and hillsides with our motor running full power, and for hours it seemed like we could stick out our hands and pick daisies. We could only get a few hundred feet of altitude. The gradual lightening of our load as the big Liberty consumed 26 gallons an hour didn't help much because, as we got farther west, the altitude of the country was increasing and we were apparently only keeping up with it," he added.

By nightfall they were west of Indianapolis, being pushed along by a 20-mile tail wind. When daylight appeared on May 3 the T-2 was over Arizona and had burned enough fuel to permit throttling the engines back a little without loss of altitude.

"When we reached this point we were much more sure of success," Macready said, explaining that they had been concerned about the ability of the engine to continue operating properly at full throttle for so long a period of time.

After 26 hours and 50 minutes in the air the T-2 landed at San Diego with only enough fuel left for another 100 miles. As the oil-spattered airmen stepped off the plane a cheering throng greeted them. Sirens blared, men shouted and threw their hats into the air, and women waved handkerchiefs and thrust flowers into the aviators' arms.

The two airmen managed to make their way to the Officers Club for the official welcome. Telegrams poured in for hours from President Coolidge, Generals Pershing, Patrick, and Mitchel, Admiral Moffett, 93-year-old Ezra Meeker who had once crossed the continent by ox team, and countless others.

Most welcome of the telegrams, however, was received by Maj. Leonard H. Drennan, Air Service Chief of Personnel. The sender was Col. Franklin R. Kenney who had been wartime executive officer of the Bureau of Military Aeronautics. The telegram said:

"I win five thousand dollars if Macready and Kelly are successful. Will you wire at my expense Macready and Kelly asking them if they will accept the five thousand as a gift to celebrate with their wives the greatest achievement in our aviation history? You explain to them and make the young bull pups take it."

Major Drennan explained and the pilots accepted. They sent this message of thanks to Colonel Kenney:

"To do anything that needs doing is a soldier's plain duty but when that accomplishment brings victory to a friend it makes it a pleasure. With the grateful acceptance of your magnificent gift there is satisfaction in the knowledge that it pays to bet on the Air Service."

THE MEN BEHIND THE MAN BEHIND THE GUN

A day in the lives of armament and electronics men

Intricate electronic equipment gets periodic shop inspection.

Armament stingers in the Century Series fighters of the Tactical Air Command are kept sharp by coordinated teams of armament and electronics specialists.

At Foster AFB, Tex., F-100 *Super Sabres* of the 450th Fighter Day Wing are kept in a constant state of operational readiness with members of the 450th Armament and Electronics Squadron honing the crosshairs of the supersonic jets.

This typical A&E squadron is divided into five basic units: comunications, fire control, armament, camera, and materiel.

Communications personnel maintain all radio and electronic equipment; inspecting, repairing, and replacing items as necessary.

Partners to the communications personnel are found in the fire control section where airmen maintain the equipment that automatically sights and tracks a target. Since this equipment is electronically controlled, close coordination with communications airmen is necessary.

Actual guns and allied systems in the aircraft are the responsibility of armament personnel in the squadron. They repair guns and systems, load ammunition, and de-arm aircraft upon completion of a mission. In addition these airmen pick-up, repair, and launch tow targets used in gunnery practice.

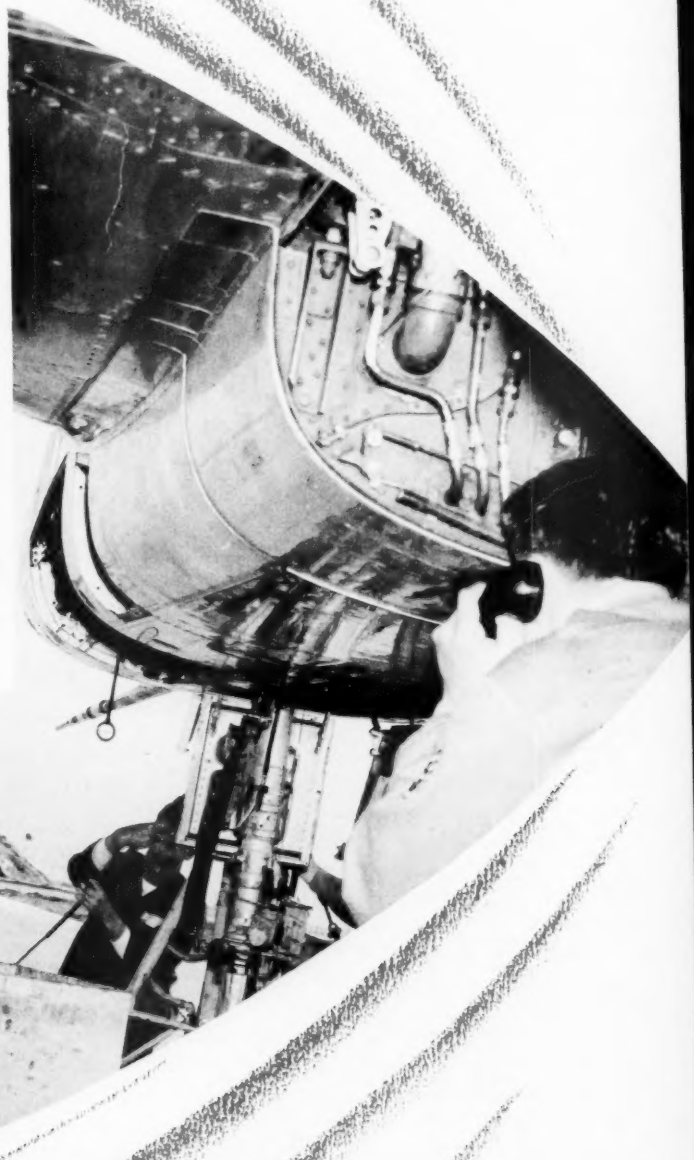
Gun cameras which give a record of hits and provide other permanent mission records are maintained by a camera section. The last unit, materiel, handles supplies, work schedules, and movement of parts to the various work units.

Activities of this squadron are typical of similar armament and electronics activity in other TAC and operational Air Force units.

Specialists check out F-100's electronic fire control system.

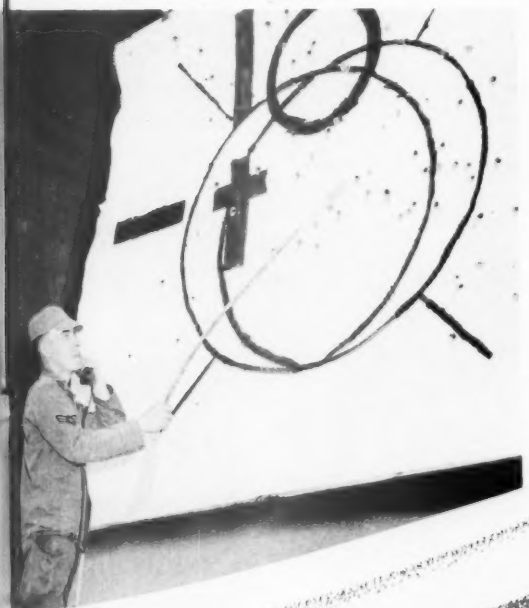
A tow target is made ready for a practice gunnery mission.

Airmen "pass the ammunition" into F-100 gun box.



At F-100 "hits" are noted and necessary adjustments made.

At firing-in butte airman telephones "hits" back to aircraft.



Photos by A/2c Fred Jamison
Foster AFB, Tex.

As far as operational 'bugs' are concerned, Eglin AFB is an exterminator cum laude.

Tests, Tactics, and Techniques

by T/Sgt. Harold L. Craven
Airman Staff

DEFENSE WEAPON. Air policemen stand guard as *Bomarc* interceptor missile is moved to Elgin's Santa Rosa Island launch site. Air Defense Command missile crews will get actual firing practice at the site with drone aircraft as targets.

FIREPOWER FOR TAC. A North American F-100 *Super Sabre* unleashes 114 aerial rockets at ground targets on Elgin's Range 52.

THE most fabulous USAF installation in the world, according to airmen stationed there, is Eglin AFB, Fla., home of the Air Proving Ground Center, where the newest Air Force weapons and techniques are studied, tested, and evaluated for operational suitability. Eglinites say their base has more legitimate claims to fame than Texas and Alaska combined.

While this may be stretching things a bit, Eglin does have a proud history, a mission as big as aviation's future, and the distinction of being the world's largest USAF base. Its land area, approximately 800 square miles, could provide a homesite for every family in Florida, Alabama, and Georgia.

Eglin has 11 airfields and nearly 40 bombing, gunnery, and missile ranges. The Eglin Gulf Test Range, which extends some 350 miles into the Gulf of Mexico, is big enough to swallow up Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and part of Maine.

Function of the giant Air Proving Ground Center, an Air Research and Development Command organization, is to conduct employment and suitability tests of all new equipment designed for Air Force use, exclusive of nuclear munitions and allied equipment and surface-to-surface guided missiles. The center also provides test facilities for Army and Navy weapons, supplies, and equipment; provides drones for Air Force, Army, Navy, and Atomic Energy Commission training and testing activities; conducts periodic firepower demonstrations; and manages USAF participation in major air shows in the United States.

The air base began as Valparaiso Gunnery Range in 1933 and was renamed in honor of aviation pioneer Lt. Col. Frederick I. Eglin in 1937. In 1942 the base was given the task of service testing all types of combat aircraft and accessory equipment and researching, developing, and testing of new air warfare methods.

More than 2,800 projects were carried out at Eglin during World War II. They included development in such fields as destruction of underwater targets, night reconnaissance, strafing, airborne mine laying, minimum-altitude bombing, and use of napalm (jellied gasoline) bombs. An adaptation of minimum-altitude bombing techniques researched at Eglin helped win the Battle of the Bismark Sea. Procedures and control techniques used in the Sicilian landings were worked out at the Florida base. The B-29 *Superfortress* and numerous other World War II aircraft were thoroughly tested by Eglin personnel, at the Florida base and at other U. S. and overseas locations.

In March 1942, Lt. Col. James H. Doolittle and 24 volunteer crews practiced short runway techniques at Eglin preparatory to their historic carrier-based B-25 strike against Tokyo. During their stay at the base their *Mitchell* bombers were given added range by removal of armament and installation of auxiliary fuel tanks. The crews took the war to Japan the following month.

Two months after the Tokyo raid the first V-2 rocket missile was test fired in Germany, and soon thereafter Hitler began discussing with his generals the possibility of launching 5,000 such missiles against England in a single day. Eventually nearly 100 steel and concrete launch sites were under construction, oriented toward London. U. S. and British bombers began hammering at the sites without major effect. In 1944 Eglin was given the task of developing more effective tactics against them. In 12 days several typical launch sites were built at the Florida base and attacked by various methods. From this effort it was learned that the most effective assault was the high-speed, low-altitude, fighter-bomber attack.

Eglin personnel carried out tests on a new gunsight, the K-14, which was destined to give *Mustang* and *Thunderbolt* pilots five times as many hits on a single target. One Eighth Air Force fighter group commander is said to have called the sight "just another gimmick"

whereupon it was installed on the P-51 to be used by a new second lieutenant on his first combat mission. According to the story the lieutenant bagged an FW-190 his first time up, and on the following day the sight was placed on the commander's plane. One Eighth Air Force pilot had so much confidence in the Eglin-developed sight that he carried only 175 rounds of ammunition per gun in his *Mustang* to save weight and gain maneuverability. On one mission he bagged six enemy planes and returned to base with ammunition left.

A new military organization, the First Guided Missiles Group, was formed at Eglin during the war and staffed with experts in jet propulsion, aerodynamics, infrared rays, control systems, radar, television, and other scientific devices. The group developed tactics and techniques for use of a number of new weapons including bombs with radio-controlled rudders; preset glide bombs; television glide bombs; and radio-controlled war-weary B-17 *Flying Fortresses*. The B-17s were loaded with 20,000-pound cargoes of explosives and crashed into enemy targets. The *Razon* bomb, controllable in azimuth and range, was ready for operational service at the end of the war. Use of atomic bombs by the 509th Composite Group, headed by former Eglin test pilot Col. Paul W. Tibbets, Jr., made employment of the *Razon* unnecessary.

At the war's end construction was begun on a giant climatic hanger, a 50,000-square-foot laboratory capable of reproducing all the world's weather. Today that facility, only one of its kind in the world, is being used to test thousands of items for all the services, from fuzes to space vehicles, in temperatures ranging from 100 degrees below zero to 165 degrees above.

The First Guided Missiles Group continued to function after the war ended. Along with missile activities the organization developed drone aircraft. In the summer of 1946 drones were provided for *Operation Crossroads*, the first atomic tests conducted in the Pacific. In January 1947, the group conducted a successful drone flight from Eglin to Washington, D. C. in a simulated bombing mission.

Eglin gained major command status as the Air Proving Ground Command in 1948. In 1957 APGC and a tenant organization, the Air Force Armament Center, were combined to form the Air Proving Ground Center under the Air Research and Development Command.

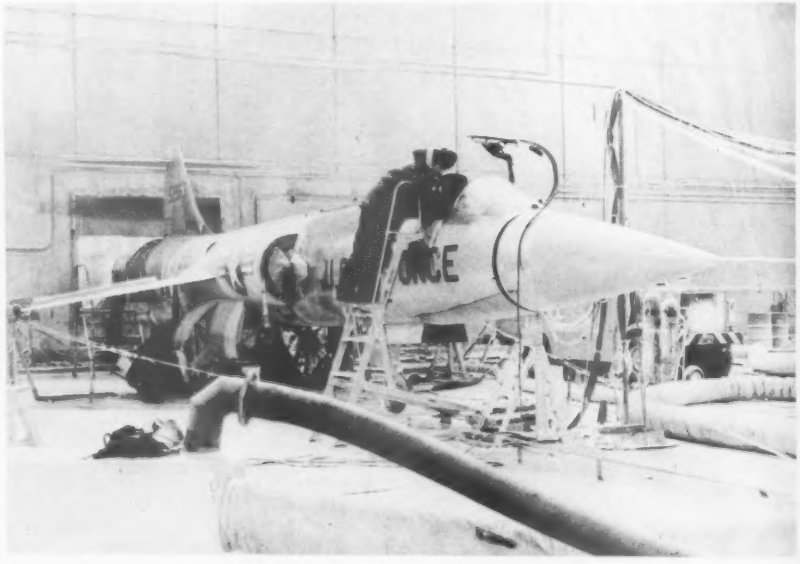
Despite Eglin's size and the quality of its test facilities, the world is its test bed. Some tests can be best performed under laboratory conditions; others produce more valid data when carried out under the stress of actual operational service. Usually both methods of testing are needed.

When the H-19 helicopter was undergoing the final phase of testing several years ago, a test team took one of the choppers into action in Korea. When a Russian-built MIG-15 crashed into a hillside, the H-19 crew, accompanied by fighter escort, moved in and picked up the pieces for study by intelligence officers. Later a North Korean pilot delivered a MIG-15 to South Korea intact. It was shipped to Eglin for climatic and other tests.

A 20 mm. cannon now being used on Century Series fighters was combat tested in Korea by an APGC test pilot, Maj. Lonnie Moore. Major Moore became a double-jet ace during the test project.

Many of Eglin's current tests involve use of ground-to-air and air-to-air missiles. Because there is no better way to determine a missile's effectiveness than to give it a target capable of taking evasive action, the 3205th Drone Group, which has its headquarters and one squadron at Eglin and squadrons at Patrick AFB, Fla., and Holloman AFB, N. Mex., provides maneuverable, radio-controlled targets. The Eglin squadron uses QF-80 jet fighters and Ryan Q-2A *Firebees*, operated from the cockpits of other aircraft or from mobile ground stations. Each QF-80 has a built-in automatic control sequence which, in the event radio control is lost, will fly it to 8,000 feet and put it into a left turn. It will continue circling until radio control is restored.

For economy reasons, missiles fired at drone targets are usually set for near misses rather than hits. Automatic cameras record results.



DEEP FREEZE OVEN. Lockheed's F-104 *Starfighter* is put through cold weather test in climatic hangar. Main chamber temperature is variable from minus 65 to plus 165 degrees. A smaller chamber permits engine starting tests at minus 100 degrees.

FIERY DESTRUCTION. *Super Sabres* destroy a simulated railroad yard with napalm during a firepower demonstration. Three demonstrations are given annually to acquaint government, business, and education leaders with America's present and future military capabilities.

Firebee drones are launched from racks beneath the wings of B-26 *Invader* bombers. Upon completion of their missions *Firebees* land by parachute, on the ground or in the Gulf of Mexico. Recovered drones are put back into service by 3205th Drone Squadron maintenance personnel. Water recoveries are made by Eglin's Air Force "navy."

This "navy" has vessels of several types, including a ferry, barges, rescue and salvage boats, and various smaller craft. Its official title is Marine Operations Branch, 3208th Test Group. It patrols the Gulf Test Range to retrieve drones, instrument pods, and missile nose cones; clears target areas of fishing and pleasure boats, maintains visual and radar surveillance over impact areas; and, when the need arises, assists the Eglin-based 48th Air Rescue Squadron in search and rescue operations.

Among the organizations flying test missions over the Gulf is TAC's 335th Tactical Fighter Squadron, our first F-105 *Thunderchief* unit. The 335th traces its history back to the first American Eagle Squadron in Britain's Royal Air Force prior to U. S. entry into World War II.

Every member of the squadron is a volunteer. All its pilots are combat-qualified and two-thirds of them have combat experience. The commander, Lt. Col. Robert R. Scott, is a veteran of 171 World War II and Korea combat missions. His operations officer, Maj. Jim Bean, and his executive officer, Maj. Marvin Johnson, both gave up command of TAC fighter squadrons to serve with the 335th. Assistant operations officer is fighter-gunnery expert Maj. Claire P. Chennault, a veteran of nearly 16 years' service with tactical fighter units. Maj. Chennault has used gunnery ranges at Eglin on many occasions during the past decade. He first visited Eglin in 1936 when his father, the late Lt. Gen. Claire L. Chennault, was sent there from Maxwell Field, Ala., for gunnery practice.

Requirements for assignment to the 335th are high. Pilot applicants must be combat qualified in another TAC organization and must have at least 1,000 hours' jet experience, including 100 hours in Century Series fighters. Total flying time requirements for captains is 2,000 hours; for lieutenants, 1,250 hours.

Experienced pilots of the 335th will put the *Thunderchief* through its paces, evaluate it as a weapon system, and make any necessary recommendations for improvements.

Getting the using agency into the test program is standard procedure at Eglin. An amazing new approach control system, VOLSCAN, designed to permit landing of 80 to 120 aircraft per hour rather than 20 to 30 as with present equipment, without the necessity of "stacking" airplanes in the control area, is being tested jointly by Airways and Air Communications Service and APGC personnel.

VOLSCAN is one of many complex systems undergoing tests at Eglin. As systems become more complex, the importance of human operators and technicians increases. Training must keep pace with Air Force needs. To assure that it does an Air Training Command liaison officer at Eglin evaluates groups of technical school graduates. If he finds that their training does not meet present and projected Air Force needs, courses are rewritten.

Final responsibility for mating man and machine belongs to the Human Factors Office, headed by Lt. Col. William H. McAbee. Of 15 officer and civilian engineering psychologists assigned to the office, 13 have master degrees or higher. Six of the seven officers are combat-experienced senior pilots and two of the civilians are ex-military pilots. Their job is to analyze machines to

TARGET DRONE. Airmen of Eglin's 3205th Drone Squadron attach a Ryan *Firebee* drone to its mother plane, a B-26 *Invader* bomber, prior to a gunnery mission over the Gulf of Mexico. The drone will try to elude Century Series fighters.

determine if they can be operated efficiently by men. On one occasion they found a dozen deficiencies in the cockpit of a fighter plane which had undergone many tests and was, according to its manufacturer, ready to go into production. Production was delayed until the cockpit was redesigned. The engineering psychologists always have a number of tests in progress to assure optimum use of human abilities and to increase the safety and efficiency of Air Force activities.

When a new type airplane is delivered to Eglin for operational evaluation it has already been approved as an airplane by factory and military test pilots. An efficient airplane, however, is not necessarily an efficient fighting machine. APGC's combatwise test pilots and other test and development personnel must put it through a series of exhaustive tests under simulated combat conditions. These tests uncover deficiencies that may exist and in many cases result in recommendations for major changes.

Eglin tests antiaircraft weapons as well as aircraft. Recently transfer of *Bomarc* interceptor missile test facilities from Cape Canaveral, Fla., to Eglin's Santa Rosa Island missile site, was effected. The *Bomarc* is a potent area defense weapon. One model is capable of knocking invading aircraft out of the sky over a 250-mile radius. A second model will extend this radius to somewhere around 400 miles. APGC and Air Defense Command personnel at Eglin are working together in *Bomarc* test and development activities. The 4751st Air Defense Missile Wing based at Eglin Auxiliary Field No. 9 (Hurlburt Field) will develop and conduct the first Air Force *Bomarc* training program there. Missile crews assigned to *Bomarc* squadrons in heavily populated areas will get actual firing experience at Santa Rosa Island with drone aircraft as targets.

APGC's cooperation extends to military activities outside the Air Force and to Reserve and Civil Air Patrol training programs. All the U. S. military services and those of friendly foreign nations use the climatic hangar and other laboratory facilities; Navy student pilots from Pensacola Naval Air Station practice touch-and-go landings at one auxiliary field; Army Rangers use another as a survival training school.

Because Eglin has some 400,00 acres of forest lands, APGC has its own forest rangers. Nine fire towers permit them to detect fires immediately and 2,100 miles of fire lanes and sand roads enable firefighters to get into action quickly anywhere on the base. Although Eglin has approximately 100 forest fires per year, from lightning, aircraft testing, and other causes, fire damage is held to around 1,500 acres annually. A million tree seedlings are machine planted every year.

In addition to protecting the base from forest fires the rangers carry out an active fish and wildlife conservation program, financed through sale of hunting and fishing permits and timber. Eglin's forests are home to nearly 12,000 deer and fishing is excellent, so hunting and fishing permits are not difficult to sell.

Nearly everyone at Eglin, from Maj. Gen. Joe W. Kelly, APGC comander, to A/3C Dianne M. Sherer, telephone work order clerk, says duty at the base provides rich rewards in personal satisfaction. Most Eglinites, whether engaged directly in test and development work or in equally necessary support services, appear to be fully aware of the contribution they are making to U. S. airpower and the future of aviation.

ULTRASONIC GATLING. Like the Gatling which revolutionized firepower nearly a century ago this Vulcan 20 mm. cannon features externally-powered rotating barrels. Test personnel say the Vulcan, which is used on Lockheed's *Starfighter*, has 10 times the firepower of its World War II predecessors.

AIRMAN'S WORLD

PREVENTIVE MAINTENANCE

Maintaining the flying capability of any aircraft is a full-time job. *The United States Air Force Dictionary* defines preventive maintenance as the "day-to-day maintenance that is performed to keep equipment in good working order and to prevent breakdown due to neglect." A 1C Richard Autry's arresting shot (see page 31) of a 4123rd Strategic Bombardment Wing SAC maintenance crew at Carswell AFB, Tex., graphically illustrates the complicated task confronting such crews as they assure the readiness of USAF's weapon systems.

BITS OF BLUE

. . . Lt. Gen. Hubert R. Harmon, first Superintendent of the United States Air Force Academy, was buried in the Academy cemetery recently, marking the first burial at the permanent Academy site. His remains were cremated after his death last year and held for burial in compliance with his request.

. . . Air National Guard is now completely jet-equipped. Last organization to undergo conversion was the 149th Fighter-Interceptor Squadron at Richmond, Va. The 82 combat squadrons now utilize Republic F-84 *Thunderjets* or RF-84F *Thunderflash* fighters, North American F-86 *Sabrejets* or F-100 *Super Sabres*, Northrop F-89 *Scorpions*, or Martin RB-57s.

. . . Missilemen for the first *Atlas* ICBM squadron recently began training at SAC's Vandenberg AFB, Calif. Initial class numbered 108 students, all members of the 576th Strategic Missile Squadron.

. . . USAF has opened a new Air Attache office at the American Embassy in Addis Ababa, Ethiopia, Africa. It began operating in November.

. . . New and revised Airman Proficiency Tests in selected ladders of several career fields will be ready for the March and April, 1959 testing periods. Those affected are Communications Operations (29), Armament Systems Maintenance and Gunner (32), Personnel (73), and Education and Training (75).

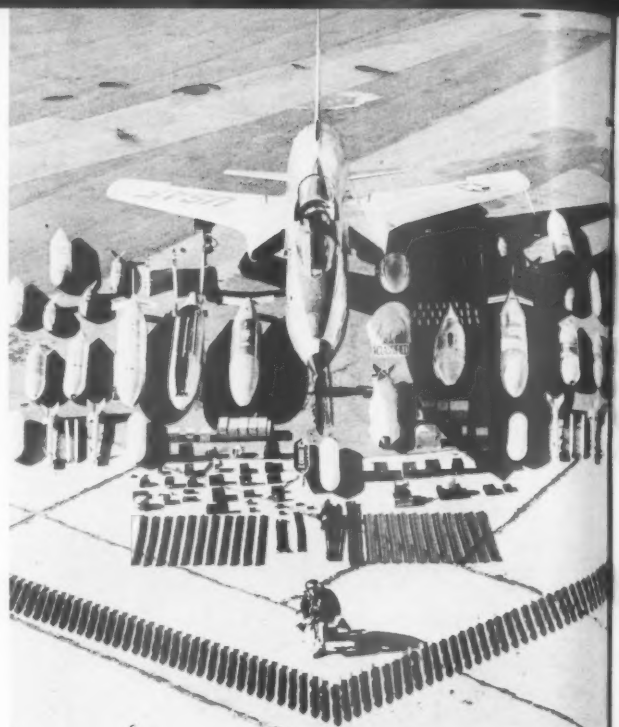
. . . Sophomore fullback Mike Rawlins entered the USAFA football record book in the *Falcons* first game this fall. Rawlins contributed a 78-yard scoring run, longest in Academy history, as his portion of the University of Detroit rout. Final score: USAFA-37, U. of D.-6.

LOCK AND KEY

The Spanish Bureau of Customs has reserved the right to inspect all arriving shipments of household goods. Unless containers can be unlocked, they will be broken into and no claims for container damage will be honored.

Therefore, airmen being assigned to Spain are reminded that keys and combinations must accompany all locked baggage and household goods to assure their safe arrival.

Details of the policy are outlined in a new AFL 75-26, dated 12 September 1958.



USAF has announced that the 335th Tactical Fighter Wing, Seymour-Johnson, AFB, N. C., will be the first Air Force unit to be equipped with the new Republic F-105 *Thunderchief* fighters. More than 1,000 flight tests comprising over 750 hours have been successfully completed on the new aircraft.

The F-105 can carry an assortment of armament said to give the one-man fighter-bomber as much destructive power as an entire bomber formation of World War II.

External stores displayed in photo are: (foreground) 2.75 rockets; Vulcan cannon (directly behind pilot) which can fire thousands of rounds per minute of 20 mm. ammunition shown on either side. Boxes directly behind contain electronic equipment. Left side (l-r): first row: rocket launcher; air-to-air missile with launchers; second row: fire bomb; chaff dispenser; 450-gallon wing fuel tank; "buddy" refueling tank; third row: fire bomb; two 750-pound bombs; 1,000-pound bomb; bomb-carrying pylons; (extreme top left) flare dispenser. Right side next to plane (top to bottom) nuclear weapon bombing trainer; secret nuclear weapons; next vertical row practice bombs; bomb bay fuel tanks. (Note: all other items, including the pylons behind the practice bombs, are duplicates.) The F-105 carries nuclear weapons externally or internally. The "half shell" object to the left of the nose is the center fuselage nuclear bomb-carrying pylon.

MODERNIZED TESTING

Category testing, a streamlined program to cut down development time for aircraft and weapon systems, has been activated by Air Research and Development Command.

Three test categories replace the eight formerly performed. Under the old system, testing was undertaken after delivery to the Air Force when related items, such as component parts, support equipment, armament, and other hardware, were mated. Category testing merges all these factors at aircraft birth and results in package delivery—development and testing completed.

Category one of the new system searches out bugs in the individual aircraft or missile components and sub-systems. Qualification, redesign, refinement, and reevaluation of the components are determined at this stage.

Checking combined sub-systems which are going into the final program is the aim of the second phase. Early decisions on reliability, durability, and compatibility of the mated sub-systems are simplified.

The final category entails user evaluation, including components, support items, and complete squadron unit skills under operational conditions. This aids in determining the operational efficiency of the complete system for USAF use.

The program is staffed by a Joint Test Force (JTF) comprising representatives from ARDC's Weapon System Project Office, Air Materiel Command, and the using command.

Under the new system, an aircraft or weapon system is assigned to one of ARDC's centers with the center commander appointing a test director.

Convair's B-58 *Hustler* was partially developed under the improved procedure, but North American's F-108 and B-70 *Valkyrie* will be the first aircraft to be completely processed under the time-saving techniques.

BRIGHTER RADAR

For the first time, sharp, bright images—even in strong sunlight—will be possible with an airborne radar set newly developed by the Bendix Aviation Corp. and Wright Air Development Center.

Present sets require observers to use light-proof hoods during daylight operation to assure that the image will be bright enough to allow maximum identification of objects. No shield is required with the new product.

Bendix officials explained that the improvement could be likened to that between modern television receivers and those of 10 years ago which often required darkening a room to make the picture visible.

The cathode ray storage tube may be adjusted by the operator for his own individual preference in brightness. The new set will soon be substituted for earlier Bendix radars used in many USAF troop-cargo and jet tanker aircraft. It is also interchangeable with many other sets presently in use.

MISSILE SAFETY COURSE

Missile Safety, a new Air Training Command course, is now being offered at Chanute AFB, Ill., to ground safety officers, 7-level airmen, and civilians employed in the missile field.

Designed to teach USAF missile technicians how to safely handle missiles, the 90-hour course covers storage and transfer of liquid oxygen, high pressure fuel systems, explosions, radiological hazards, safety devices, protective equipment, and similar subjects peculiar to the missile field.

Instructions cover the physical characteristics of propellants and storage, handling, and inspection procedures. Orientation includes an introduction to rockets and missiles, their operation, and application. Emphasis is placed on the potential accident hazards inherent in design and materials, and on procedural and human errors that may lead to accidents. The course offers experienced ground safety personnel lateral training in the fundamentals of maintaining and operating missile and rocket weapon systems and related support equipment.

Prerequisite for entry is qualification in either AFSC 7354 or 73470, or the civilian equivalent. The course will be conducted continuously with new classes entering at three-week intervals until training needs are filled.

OCS APPLICATIONS

Personnel officials at Air Force headquarters are urging qualified airmen to apply for Officer Candidate School.

While no shortage of applicants exists and filling class quotas presents no problem, authorities were quick to point out that an expanded number of applicants allows more selective appointments and assures maintenance of the highest level of ability in the officer corps.

Primary qualifications require the candidate to be be-

Against a backdrop of Moon-like scenery, Dr. Bruno Balke, German-born physiologist with USAF's School of Aviation Medicine, carries M/Sgt. Samuel G. Karst piggyback at the 14,250-foot level on Colorado's Mt. Evans. The two were part of a group from the school which recently spent 40 days on the mountain acclimatizing themselves to living at progressively higher altitudes. Prime purpose of the trip was to establish criteria for selection and training of the first spacemen.

Results of the work on Mt. Evans are still being evaluated; however, school officials feel they are much closer to the "look" of tomorrow's spaceman. He should be 30 to 45 years old; in top physical condition, but not too muscular; trained in pressure breathing; and acclimatized to about 14,000 feet for optimal protection against lack of oxygen and the bends.

tween 20½ and 26½ years of age; a citizen of the United States; and presently serving in a warrant officer or enlisted status. The applicant must have completed one year of military service, at least the last six months of which were in the Air Force. Additionally, he must possess a high school diploma or passing grades for a complete battery of USAFI high-school-level General Educational Development tests; be of good moral character; and eligible to reenlist in the Air Force. Complete application details are outlined in AFR 53-3.

The school is located at Lackland AFB, Tex., and offers a six-month course designed to equip the graduate with the basic fundamentals of a nonflying USAF officer. Candidates successfully completing the prescribed course of training are appointed second lieutenants in the United States Air Force Reserve and immediately placed on active duty in that grade.

BADGE OF AUTHORITY

Air policemen will soon sport a distinctive badge of their own to replace the well-known arm band denoting their duty assignment.

Designed for on-duty wear only, the new shield is scheduled for distribution to air police organizations early next year.

Purpose of the new badge is to boost prestige and enhance the appearance of air policemen. Providing badges which are permanent instead of temporary brassards, the USAF Provost Marshal's Office points out, is also expected to result in substantial savings of Air Force personal equipment money.

EFFORT SAVER

An Air Force flight acceptance crew, putting the Boeing B-47 *Stratojet* through its paces at 35,000 feet, was totally unaware of a freeloading passenger aboard.

The passenger, noted for flying ability in his own right, was discovered in the crawlway between the bomb bay and cockpit by a flight mechanic during a post-flight check.

Spotting what he thought was a bunch of rags in the dark tunnel, the mechanic grabbed them only to find he had locked on to a thoroughly mad and half frozen owl hawk. A second mechanic, equipped with protective gloves, removed the bird and released him.

The owl hawk flew to a nearby engine stand where he perched in momentary, stolid, angry contemplation of man's flying methods. Then, checking his nature-given flaps and landing gear, he took off for the woods at altitudes a bit more to his personal liking.

CAN YOU BRING HER BACK?

A serious backlog exists at overseas ports as a result of lack of space-available slots for returning dependents who are in overseas areas without official USAF sanction.

More than a year ago Hq USAF established severe restrictions on travel of dependents of airmen below grade E-4 and those of E-4 airmen with less than four-years' service.

In part, the policy stated, " 'Space-available' transportation from overseas to the United States for such dependents will be restricted to those cases which, in the judgment of the overseas commander concerned, must be so transported in the best interests of the government."

The shift to air travel for the majority of Air Force personnel has created a serious backlog of such dependents and strain on government facilities in port areas.

Airmen in these categories whose families enter overseas areas in a "visit" status and airmen who marry foreign nationals should be prepared to defray travel expenses to the United States for these dependents. Personnel officials have warned that the space-available situation on government transportation cannot be expected to improve in the near future and that emergency aid sources are already overtaxed by the present backlog.

OIL GONE

ARDC scientists at Wright Air Development Center, Wright-Patterson AFB, Ohio, have announced significant progress in eliminating oil as a lubricant in ball and roller bearings. The replacement element is high temperature vapor.

Hydrocarbon-air vapor, composed of film forming agents, prevents abrasive metal oxides from forming on the bearings by continuously "filming" their rubbing surfaces. The film, in turn, combats welding and seizure of the bearings as they slide against a moving surface.

Bearings made of tool steel have been tested at speeds in excess of 10,000 r.p.m. and through temperature ranges of 100 to 900 degrees, Fahrenheit. Early successes indicate that the vapor lubricating method may offer certain advantages over liquid lubricants.

This month marks the first anniversary of the activation of the 556th Strategic Missile Squadron which will be equipped with the Northrop SM-62 *Snark*. Presently in training at Cape Canaveral, Fla., the unit will move to an operational site sometime during the coming year. Here T/Sgt. James Fedie is shown at a mobile launch trailer control panel. Prior to launch, a count-down is conducted from this trailer during which the missile and its many systems are checked to assure perfect functioning.

Rx FOR RS

Information is now available at all Veterans Administration offices which will enable more than 685,000 Korean conflict veterans to convert previously non-convertible term GI insurance to permanent plans.

Beginning next month, Public Law 85-896 will become effective, and holders of term GI policies, identifiable by the letters "RS" before the policy number, will be offered three options—conversion to one of several permanent plans; exchange for limited convertible insurance; or retention of the policy as term insurance. In all cases, the maximum amount of the insurance may not exceed the face value of that now in force.

Policies which are converted may follow any one of several plans—20-pay life, 30-pay life, 20-year endowment, endowment at age 60, or endowment at age 65. These policies will not be dividend-yielding.

If holders elect to exchange their present policies for limited convertible insurance, the new term policies will carry lower premium rates but, after September 1, 1960, they may not be renewed by persons who have passed their 50th birthday.

Premium rates for "RS" term policies which are retained in their present form—the third alternative—will increase each five years during which the policy is in force.

Only "RS" policy holders will be affected by the new law. VA officials stressed that this does not re-open GI insurance plans to all.

COORDINATED SAVE

Two USAF lieutenants were recently awarded Commendation Medals in recognition of a brilliant cooperative "save" of a distressed civil airliner in northern Montana near the Canadian border.

A terse message from a southbound airliner, flying near Swift Current, Canada, set the stage for one of the most dramatic incidents in the history of two Air Force AC&W squadrons.

The airliner issued a radio report of a runaway propeller and white hot engine shortly before 9:00 p.m. Within minutes, Lt. David Johnson, senior radar director at the isolated 778th AC&W site, spotted the crippled plane on his radar scope. He contacted the aircraft and quickly briefed its crew on the surrounding terrain. The initial message was followed by a report on the nearest available airstrips capable of handling the stricken giant.

The pilot chose to point his aircraft toward Cut Bank, Mont., nearly an hour's flying time away. At that point, Lt. Raymond Wahl, Johnson's counterpart at the 681st AC&W Squadron and considerably nearer the plane's final destination, cut in to take verbal control of the final race against tragedy.

As the huge aircraft turned on its final run, the prop finally tore itself loose, narrowly missing the aircraft's cabin. In spite of this final harrowing development, a scant hour and a quarter after the Air Force crews had leaped to assist in the emergency dash, the crippled airliner touched down at Cut Bank, and 61 passengers and 10 grateful crew members scrambled to safety.

Airline officials joined the Air Force at the special medal award ceremonies in Kansas City and presented the two officers with replicas of the Constellation they had aided to safety.

WING WALKERS

Added safety is now available to maintenance personnel at Dow AFB, Maine, thanks to a simple but ingenius invention by M/Sgt. Joseph Harrelson, 4060th Field Maintenance Squadron.

During the course of regular aircraft inspections, line crewmen are often called upon to scramble over wing surfaces in pursuit of their duties. As planes have grown in size, most wing surfaces have gotten farther from the ground. As a result, a fall from a wing to the concrete of a parking ramp or floor of a hangar can have serious consequences.

Sergeant Harrelson has devised a safety line to guard against such accidents. Comprised of a harness and cable, the device is strapped around the body of the mechanic and attached at the opposite end to an outer wing tip. Cable length may be adjusted to assure that, in the event of a fall, the wearer will be halted short of the hardstand surface.

Harrelson's invention has been recognized and approved by both Eighth Air Force and Strategic Air Command.

You Ask It

Effective October 1, many overseas tour lengths were adjusted. As a result, some confusion exists regarding administration of the revised program.

Q. How were the new tour lengths determined?

A. Department of Defense, in an effort to make overseas tours as uniform as possible, appointed an all-services *ad hoc* committee. This committee held a total of 17 meetings during which they attempted to iron out discrepancies between all tour lengths and arrive at new figures which were acceptable to all services as well as DOD.

Q. In many areas, bachelors must serve the same tour as married personnel accompanied by dependents while unaccompanied married personnel serve shorter tours. What is the reason for this?

A. When queried, overseas commanders indicated that short tours for bachelor personnel in these areas would cause a major continuity problem forcing a much more rapid turnover of personnel than was considered feasible. With this in mind, DOD okayed the longer tours for bachelors.

Q. Will married men who voluntarily leave their dependents at home be allowed to serve the shorter tour?

A. Yes. There were several reasons for this decision. First, it would be an administrative impossibility to determine which dependents are being left behind for such reasons as medical expediency. Second, in many areas there is a severe shortage of dependent housing and waiting periods are abnormally long. Consequently, many men would be called upon to serve almost a complete unaccompanied tour before housing became available. Finally, desire to have dependents with them would turn many men to private housing thus forcing the price of these rentals above a legitimate figure and causing undue financial hardship.

Q. In areas where the tour differential is quite large, won't people who were assigned under the old program suffer on rotation when compared to people assigned under the revised program?

A. This possibility exists; however, overseas commanders have been given the authority to stagger tours to compensate for such differentials. Every effort will be expended to assure that those who went overseas first, return to the ZI first. This may result in some people serving slightly longer tours until the program has had an opportunity to become fully adjusted.

If you have a question concerning some phase of USAF life, send us a letter or postcard and we will make an effort to obtain an answer from the division responsible for the program in question.

AIR AGE LIBRARY

Space and Research

Rocket Pioneers on the Road to Space, Beryl Williams and Samuel Epstein, (Julian Messner, $3.75). A series of profiles on the men and groups who pioneered and paved the way for present achievements in the field of missiles and rockets.

Exploring the Distant Stars, Clyde Classon, (G. P. Putnam's Sons, $5.00). A complete history of astronomy with an explanation of the universe, written in clear, simplified layman's language.

Rockets and Missiles, Erik Bergaust, (G. P. Putnam's Sons, $2.00). A revised edition of research and operational-type guided weapons of the United States. The book is written in the readable pictorial-journalistic style so popular in many magazines, and details the most important, non-classified features of all American missiles.

Rockets Around the World, Erik Bergaust, (G. P. Putmam's Sons, $2.00). Mr. Bergaust has compiled a second book, similar to *Rockets and Missiles,* which concentrates on advances being made in the field by other nations. The section on the Soviet Union is one of the most extensive reports ever published on the subject in the United States.

History

Plane Crash!, Clayton and K. S. Knight, (Greenberg, $4.50). A study of aircraft accidents, featuring the major and minor air crashes of aviation history. The authors analyze the reasons for these crashes and the intricacies which aided in determining the causes.

The Berlin Blockade, W. Phillips Davison, (Princeton University Press, $7.50). A complete study of an operation generally referred to as the greatest peacetime aerial undertaking in the history of the world. It reviews the elements of the cold war and the tactics, techniques, strengths, and weaknesses of both sides as demonstrated in the first major post-World War II East-West clash of ideas.

Adventure

The Look of Eagles, John R. Godfrey, (Random House, $3.95). Gen. Thomas D. White, USAF Chief of Staff, has supplied the foreword to this highly interesting autobiography. Major Godfrey scored 36 victories in the ETO during WW II and time and again displayed tremendous bravery in the air. He was called upon to show the same type of courage in a relentless but hopeless battle against an incurable disease which recently claimed his life. Dramatic and readable.

Thunderbolt!, Martin Caidin, (Rinehart, $5.00). An exceptionally well told story of a second of USAF's leading World War II aces in the ETO. Col. Robert Johnson scored a total of 28 victories and the tale of his personal experiences makes fascinating reading.

Shooting The Breeze

Airmen overseas in English speaking countries often run into language differences more humerous than harmful. A recent report from Hunstanton, England, heard by RAF Sculthorpe, contains some vivid examples.

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An American wife almost gave up ever finding powdered sugar in the local grocery shops until she discovered the English call it *icing* sugar. Another wife spent an equal amount of time baffling the bakery shop keepers by asking for paper cake cups and eventually learned they are called baking *cases.*

A sergeant asked for thumb tacks, baffled the clerk, went back to his apartment for a sample, was smilingly informed they were called *drawing pins.*

A Hunstanton cafe owner tells of an experience with a young airman customer fresh from the states. As the airman entered the cafe he read the "No Prams" sign hanging on the door. While the waitress was taking his order he asked, "When will you have more prams?" This puzzled the waitress. He looked up again at her and said, "I'm serious, I would like to try some." At this point the waitress took her word problem to the boss, and he went out to the airmen and asked, "Look here lad, are you pulling the girl's leg about this pram bit?"

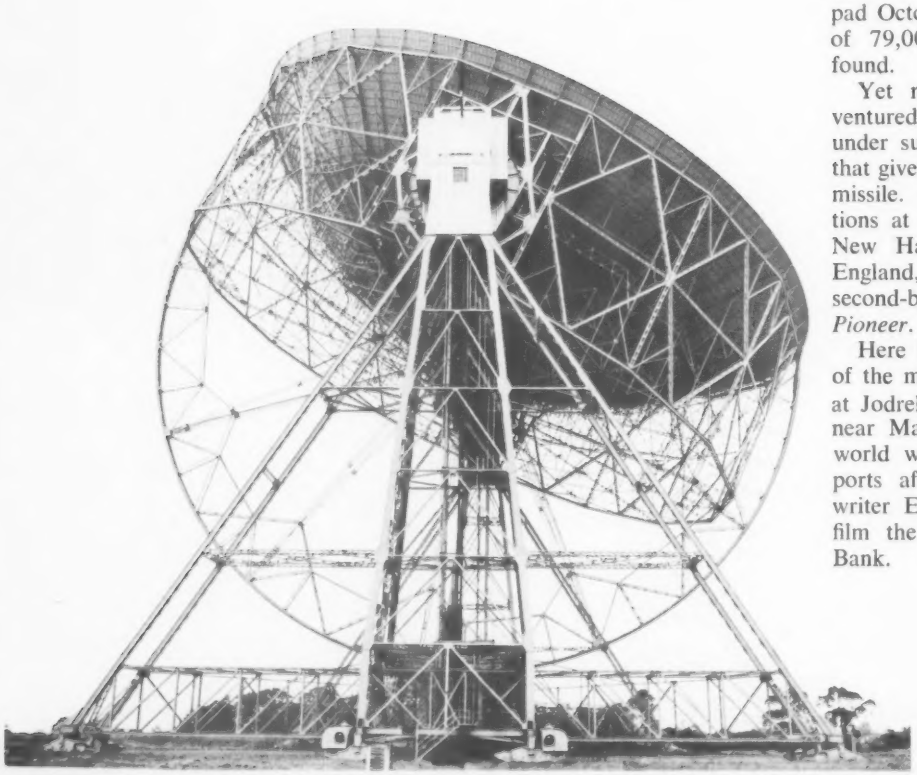
"No," the airman replied, "I'd really like to try some. By the way, what are they?"

By this time the cafe owner could see the airman was serious. "My dear fellow," he said, "prams are short for perambulators. I believe you Americans call them baby carriages . . . buggies or some such thing."

—S/SGT. BARNEY FRANCISCO

TRACKING THE

Story and photos by M/Sgt. Ed Blair
Airman Staff



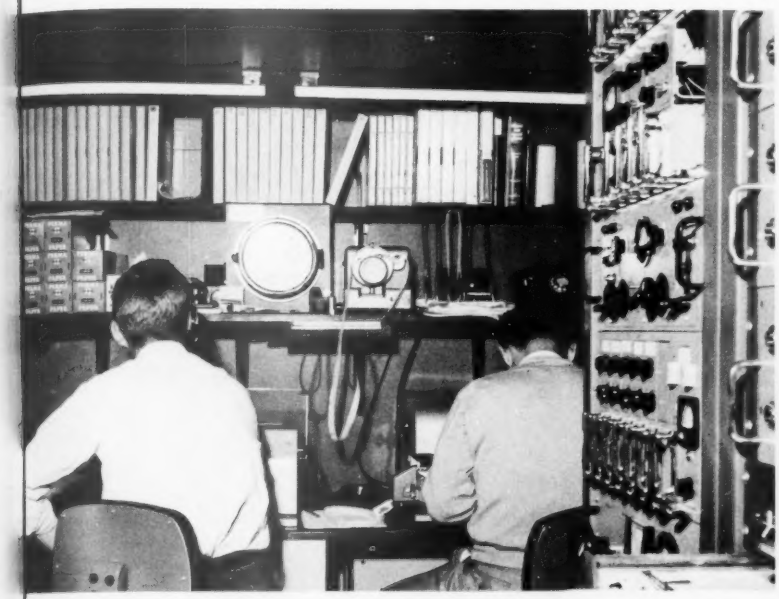
According to Merriam-Webster, a pioneer is "one who goes before, preparing the way for others to follow." A more apropos definition of the Air Force moon rocket which leaped from its Cape Canaveral launching pad October 11 to reach an altitude of 79,000 miles could hardly be found.

Yet no other pioneer has ever ventured so far into unknown regions under such concentrated scrutiny as that given the *Thor-Able* lunar probe missile. From ground tracking stations at Singapore, Hawaii, Florida, New Hampshire, and Manchester, England, scientists monitored the second-by-second progress of the *Pioneer*.

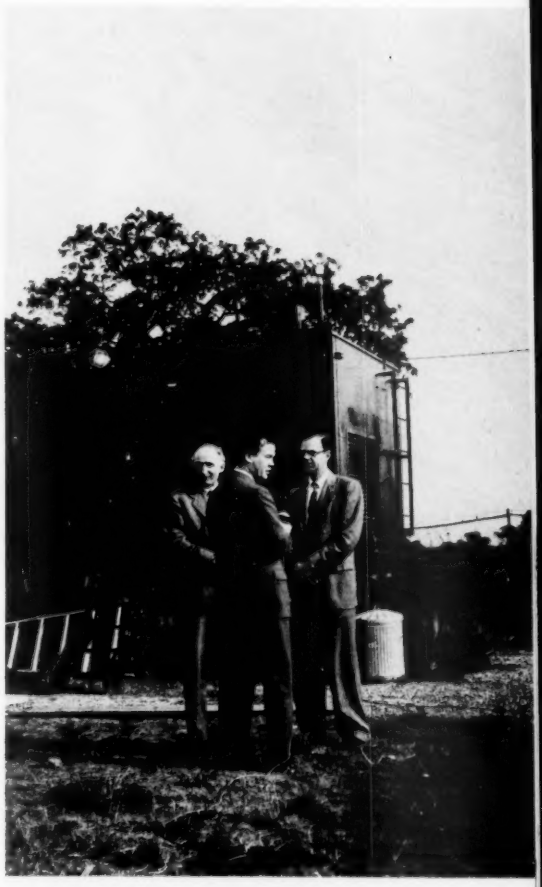
Here is an exclusive picture story of the men and equipment in action at Jodrell Bank, the tracking station near Manchester. While the whole world was waiting for the first reports after blast-off, AIRMAN staff writer Edison T. Blair captured on film the tense moments at Jodrell Bank.

Dish of the University of Manchester's radiotelescope is 230 feet in diameter. The telescope was invented and designed by Dr. A. C. B. Lovell, who kept an eye on his brainchild during the entire operation. Perfectly balanced, the dish moves instantly and precisely on rails and wheeled tracks to pinpoint the location of the rocket nearly 80,000 miles out in space.

PIONEER



Tom Guerin (left) and Michael Galvos, both of Los Angeles, Calif., maintained constant radio teletype communications with the USAF Ballistic Missiles Division Hqs in California during tracking process.



Outside the USAF tracking van, Dr. Lovell and John Taber are interviewed by a BBC TV newsman. Dr. Lovell, obviously more interested in what the telescope is doing, seldom strayed out of sight of the huge dish while tracking was in progress.

Station manager John Taber divided his time between the trailer and a nearby wooden shack where an open telephone line connected the tracking site with BMD Hqs. Here, he sweats out word that the rocket has lifted off. Another open telephone line connected BMD with Cape Canaveral.

Silhouetted against his radio-telescope through the picture window behind him, Dr. Lovell reads a data sheet while he paces nervously from recording and control consoles to the window where he watches the mammoth dish of his creation as it tracks the rocket.

Tracking van was so packed with electronic equipment that Mike Galvos practically stood on his head to check operation of the graph recording sheet.

Norman Manners, Public Information Officer for Dr. Lovell and the University of Manchester, keeps reporters at bay outside the glassed doors of the telescope's control room.

Ben O'Brien, station engineer, checks the meters that tell how the equipment recording the signals from *Pioneer* is operating.

"Lift off at 0842 GMT, second stage fired on schedule, and rocket is programming normally" came the word from Los Angeles. Engineer John Taber checks his watch to see when his station might pick up the space-bound rocket. Taber was too busy to show much emotion until later when he said over his 4 p.m. breakfast, lunch, and dinner combined, "I've gone over the thing in my mind so many times before she fired this morning, that I have trouble making myself believe it is actually up there now. I'll let down and get excited next week, probably." Once, when queried by a BBC reporter about how he felt about participating in such an historic occasion he replied, "Oh, we are all very happy about it." Then he drew loud laughter from a room full of reporters when he quickly turned to Dr. Lovell and asked nervously, "That's right, isn't it?"

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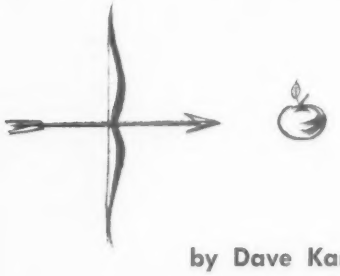
WEAPONS MEETS



by Dave Karten

"Project William Tell," *said General LeMay, "is more than the Sixth USAF Worldwide Weapons Meet. It is a major test of our ability to stop an air attack launched against this country.*

"Survival may depend upon the skills of the men who man the weapons of TAC and the Air Defense Command. Project William Tell *is the most realistic proving ground, short of actual combat conditions that we can provide to evaluate these vital capabilities."*

USAF's air offense-defense team recently passed a major test of its true combat capability with high honors. With the Free World's best bomber crews, fighter-gunnery teams, and technicians taking part, weapons meets held in October offered the most realistic proving ground, short of combat, that the Air Force could provide to evaluate two vital capabilities: precision bombing and ability to stop an attack launched against this country.

SAC demonstrated bombing proficiency at the Tenth Annual Bombing, Navigation, and Reconnaissance competition. The "World Series" pitted 156 selected SAC and eight RAF crews against each other in a test of men and equipment. Four bomber types participated: the B-47 *Stratojet,* RAF *Valiant,* the B-52 *Stratofortress,* and the reliable old B-36 in its swan song performance.

Valiants and *Stratojets,* staging out of March AFB, Calif., radar bombed San Jose, Calif.; Boise, Idaho; and Butte, Mont., then flew a tough night celestial navigation leg to Phoenix, Ariz., and returned to March AFB. Their course covered 2,825 miles. The B-52s and B-36s staged out of Castle AFB, Calif.

In previous years each crew flew six missions and was scored on the best four. This year, each crew flew only one mission.

The new scoring put a premium on reliability of crews selected on basis of proficiency throughout the year. Equally important was maintenance reliability—the aircraft along with its complex electronic equipment. Maintenance personnel, ground support equipment, and spare parts were held to a minimum.

Exact impact points of the simulated bombs and plane's precise position as it ended the navigtaional leg, were computed by electronic and radio signals. An umpire flew with each crew to insure all rules were observed.

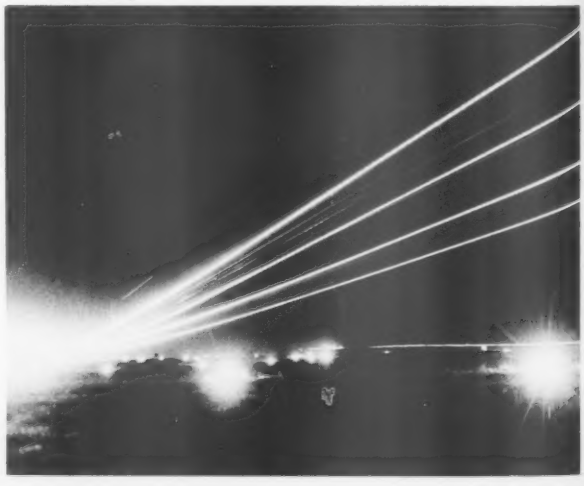
It was a deadly game, this particular series. On the contestants' ability to throw strikes might hinge, someday, the fate of the world. The razor sharp professional crews navigated and bombed so well, only a few points separated the winning crew from the others.

Two direct hits, a miss distance of six inches or less, were scored out of 492 simulated bomb drops. Navigational errors of each mission were measured in tenths of a nautical mile (600 feet), miss distance on bomb runs to the nearest foot.

Motivation of the selected air and ground crews in the competing teams was intense because of the highly competitive spirit within SAC and RAF Bomber Command, and beneficial effects of success upon individual careers. During the awards ceremony the A. C. of the highest scoring crew received a spot promotion from captain to major. Twenty enlisted ground crewmen were also promoted.

The Muir S. Fairchild Trophy, for bombing and navigation supremacy, went to MacDill's 306th Bomb Wing. Flying B-47s they scored 1,520 points in combined bombing and navigation, a scant 55.6 points ahead of second-place 310th Bomb Wing from Schilling AFB, Kans.

An RAF entry, flying the *Valiant,* took seventh place. Capt. Ray E. Elliott, 92d Bomb Wing, Fairchild AFB, Wash., stamped the B-52 as the aircraft to be reckoned



BOMBER HIGHWAY: This time exposure of Royal Air Force *Valiants* and SAC B-47 *Stratojets* at March AFB, Calif., shows searchlight-like patterns made by the navigation and take-off lights of four medium bombers taking off on the second night of competition. Runway and taxiway lights show on the ground to the left while the solid line on the ground at the right was made by automobiles on U. S. Highway 395, which parallels March AFB.

with in future "series" when he led his crew to the overall championship with a 450.2 score. Gen. Thomas S. Power, SAC commander in chief, presented awards to the winners.

"Ballistic missile wings," said General Power, "will probably compete someday in a similar contest."

TAC's Effectiveness Demonstated

William Tell, Sixth Annual Worldwide USAF Fighter Weapons Meet was divided into two phases. The tactical phase at Nellis AFB, Nev., marked the first such event where all competing aircraft were capable of exceeding the speed of sound in straight and level flight. All competitive phases were conducted under simulated combat conditions with no dry runs or extra tries allowed.

This first all-supersonic meet, hosted by TAC, featured tactical fighter teams from throughout the world

The 326th FIS team, Richards-Gebaur AFB, Mo., won the championship in the F-102 *Delta Dagger* division of the Sixth Annual Worldwide Weapons Meet. Col. John H. Bell, left, team captain, is congratulated by his division commander, Col. Theron Coulter, 20th Air Division.

representing TAC, USAFE, PACAF, and ATC, with the Nellis team taking the title. The 31st Tactical Fighter Wing from Turner AFB, Ga., placed second. Trophies and awards were presented winners by Gen. Curtis E. LeMay, Vice Chief of Staff, USAF; Gen. O. P. Weyland, commander, TAC; Maj. Gen. Chester E. McCarty, commander 12th Air Force, and Brig. Gen. James C. McGehee, commander Nellis AFB.

The meet illustrated TAC's effectiveness in the phases of combat they are charged with—local air superiority, tactical ground support, and interdiction bombing missions behind enemy lines.

For the first time, firing on Dart targets in high altitude aerial gunnery was officially part of the contest, although firing on sleeve targets was also conducted. The meet demonstrated TAC's ability to fly missions to distances behind enemy lines with conventional bombs, or low or high yield nuclear weapons.

Interceptor Phase

Hosted by ADC, *William Tell's* combat realistic interceptor phase at Tyndall AFB, Fla., was divided into three categories: F-89J *Scorpions* firing the Douglas MA-1 *Genie* air-to-air atomic rocket; Convair F-102 *Delta Dag-*

WORLD'S CHAMPION TAC FIGHTER TEAM: Winner in the USAF Tactical Fighter Weapons Meet (all categories) at Nellis AFB, Nev., was the home team, representing ATC. From left: Capts. Charles W. Maultsby and Waymond C. Nutt, Col. Bruce Hinton (captain), Capt. Dean A. Pogreba, and Maj. Jack F. Brown. Major Brown was high individual scorer in the worldwide meet with 7,478 points, followed by Captain Nutt with 7,327 points.

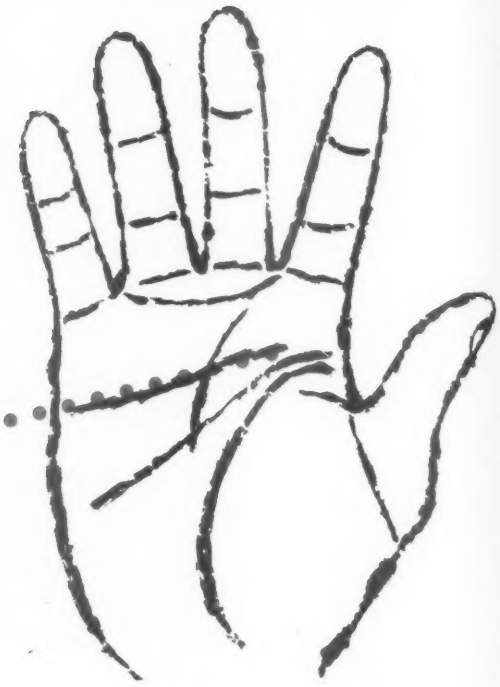
gers firing the Hughes *Falcon* missile; and North American F-86 *Sabrejets* firing 2.75 *Mighty Mouse* rockets. It featured 12 crack teams—seven from ADC, and one each from the Alaskan Air Command, USAFE, Pacific Air Forces, Training Command, and the Air National Guard. They tested their skill against 600 m.p.h. drones—free-flying jet targets half the size of regular jet fighters—which electronically recorded hits and misses. A new low radiation TV system, operated from cameras in chase aircraft, enabled observers on the ground to actually watch the firing.

Each team flew a mission daily. Individual teams flew four missions above 30,000 feet and two at altitudes between 5,000 and 15,000 feet. Because pilots and crews didn't know in advance what type mission they were to fly, the meet was more realistic than previous contests.

The winners, in category one: 465th FIS, Griffiss AFB, N. Y., with 39,500 points; category two 326th FIS, Richards-Gebaur AFB, Mo., 39,900 points; and in category three the Florida Air National Guard's 125th Fighter Group scored a new competitive "first" by flying six perfect missions for 40,800 points.

Facts
you need to know about

life insurance



A knowledge of the fundamentals of life insurance is a prerequisite for planning a sound insurance program.

by Dave Karten

THE desire for security is as old as the human race. Although the exact origin of life insurance is lost in antiquity, there is a record of one case as long ago as 1583. In that year, William Gybbons, citizen and salter of London, bought a year's protection for 32 pounds and died within the year. His heirs collected 400 pounds.

In the old days, even as now, men realized the importance—in the event of death—of providing financial relief for their families.

Your life insurance should have a plan which runs parallel to your life and your plans. The program should be tailored carefully and changed as circumstances require. Because it will give you a better understanding of your life insurance needs, let's discuss the ABCs of life insurance.

What should you look for in buying life insurance? This poses a problem for many members of the Air Force because they are generally unfamiliar with life insurance.

The answer, of course, depends on many factors. Among these are your age, the number of dependents in your family, your marital status, financial position, and plans and expectations for the future. There are, however, some good basic fundamentals upon which you can rely when considering the purchase of life insurance.

The first recommendation is to take stock of your situation. If you are single, for instance, don't conclude you should disregard life insurance. There are several good reasons for not doing so.

Life insurance is not like some commodity which can be bought any time you have the price. You must be in good health. By putting off buying when your health is good you run the risk of becoming physically ineligible and paying an extra premium at some future date.

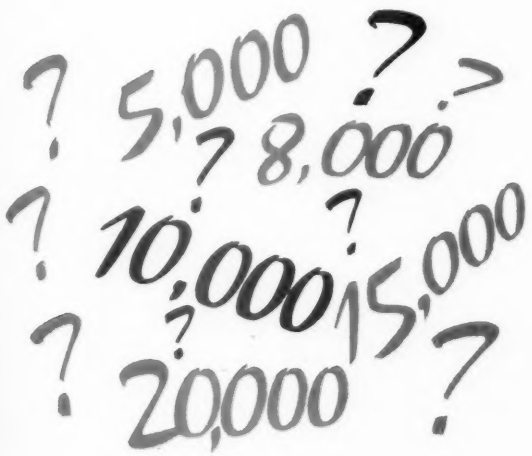
There is another advantage in purchasing life insurance now rather than later. That is the low premium while you are young. The longer you wait before buying, the higher the premium rate becomes.

The single airman who has no dependents may still have other needs for life insurance. For example, there may be a need for an emergency fund and life insurance

(In five previous articles, listed below for convenient reference, THE AIRMAN *has covered major programs affecting your personal welfare as well as that of your dependents. References:* Medicare, *Aug. 1957;* Survivors' Benefits, *Sept. 1957;* All You Have To Do Is Ask, *Oct. 1957;* Do What? Under What? [Contingency Options Benefits Act], *Sept. 1958;* Revised Dependents' Medicare, *Oct. 1958.)*

may be very helpful as collateral. If you are now unmarried you should also take into consideration the possibility that some day you may marry and have dependents. Then, of course, you must consider your ultimate goal of retirement.

The next important question: how much life insurance should you own? The only logical way to arrive at a proper amount is to figure what your family would need



each month to live as you would want them to in event of your death. After you have made this calculation your unit personal affairs adviser or any company insurance representative can tell you how much insurance you need to provide this security.

In the matter of selecting a company, the choice is wide, since there are over 1,000 life insurance companies operating in the U. S. today. It would be well to select a company that does business in the state or geographic area where you will be living. If undecided where you will settle permanently, then you would want a company operating in many states or on a national basis.

Make sure the company you select has a good reputation. By the word "reputation" is meant a long standing record of courteous and efficient service, promptness and fairness in claim settlements, and demonstrated consciousness of its responsibilities. How do you find this out? By asking people who have had experience in dealing with their life insurance company. Ask your local banker, or one of the business or professional men in your town what companies they regard most highly. Consult your unit personal affairs officer.

Types of Companies

There are three types of life insurance companies—stock companies, mutual companies, and mixed companies. Inasmuch as mixed companies contain certain features of both other types, they don't require further discussion here.

Stock Companies

A stock company is organized for profit, the stockholders being entitled to any gain that may result from the operation of business and sharing responsibility for any losses which may be incurred (payment of profits to stockholders is frequently limited by state law or company charter). Stock companies in practice frequently issue *participating* and *nonparticipating* policies. Policyholders participate through dividends of the profits in the *participating* policies. *Nonparticipating* policies are issued as low premium insurance on which no dividends are payable. In the stock company all assets, other than policy reserves, belong to the stockholders.

Mutual Companies

A mutual company is one which has no capital stock and therefore no stockholders. It is composed of the policyholders who own all of its assets and control its management through some system of voting. Mutual companies issue *participating* policies because the policyholder participates in any profits of the business. The profit is distributed in the form of dividends, or in other savings.

Comparisons of Stock and Mutual Companies

The gross premiums charged for *participating* policies by mutual companies include a loading (additional charge) which covers all expenses and includes an additional amount to safeguard the company against contingencies. Then, if the premium proves to be more than ample, as is nearly always the case, the overcharge is returned as dividends to the policyholders, thus giving them protection at approximately actual cost. Stock companies, likewise, usually load their net premium for nonparticipating policies, but the amount added is, as a rule, considerably less. In practice, therefore, the *nonparticipating* policy premium is lower than the *participating* policy premium. Below are examples of annual premiums for $1,000 insurance charged by a leading stock company and a leading mutual company.

AGE 23 — PER $1,000

Type of Policy	STOCK COMPANY *(Non-participating Policy)*	MUTUAL COMPANY *(Participating Policy)*
Ordinary Life	$15.73	$19.76
20-Payment Life	27.33	31.62
20-Year Endowment	47.05	50.52

However, the *participating* policy returns part of its premium in the form of dividends. For like policies issued 20 years earlier the mutual company referred to above

paid yearly dividends on *participating* policies averaging approximately as shown:

Ordinary Life	$5.50
20-Payment Life	7.30
20-Year Endowment	8.50

Thus, the mutual company returned an amount more than sufficient to cover the difference in premiums.

Dividends—Meaning and Source

Dividend histories are another important factor for consideration when comparing policies of various insurance companies.

Dividends are a return of a portion of the premium not needed in the light of actual operating experience. This excess is the sum which the insurance company has on hand after deducting the reserve values of its policies, paying its current expenses and annual death claims, and setting up additional funds for contingencies.

Prudent and efficient management has enabled some insurance companies to reduce their annual expenses to a figure less than their calculated allowance (the loading in the gross premium) for expenses and contingencies. Earnings in excess of the assumed interest rate are a major source for dividend payments. That's why life insurance dividends are not dividends in the normal sense of the word, and are for the most part a return of that portion of the premium not needed to meet actual operating expenses. This fact is recognized by the Government in that life insurance dividends need not be reported as income in the submission of federal income tax returns.

Analyzing Policy Contracts

Before you buy a life insurance policy, find out how much you'll have to pay in form of premiums and what the company promises in return. Both will depend on the nature of the policy you buy.

You should not assume that one policy is cheaper than another except for a particular purpose. The question, "What's the cheapest type of insurance for me to buy at my age?" could be answered only if you could furnish the date of your death. All types of insurance are on a mathematically equivalent basis. Although the premium on one type may be higher than on another, the difference is mathematically justified. A certain amount of money available annually for the purpose of paying insurance premiums may purchase varying amounts of protection combined with various other features. A sacrifice in the amount of protection secured will result in the enhancement of the other features. It's six of one and half a dozen of the other. As for the type of policy you should buy, it's imposible to recommend any one suitable in all cases. However, there are certain facts it will benefit you to know.

Four Basic Policies

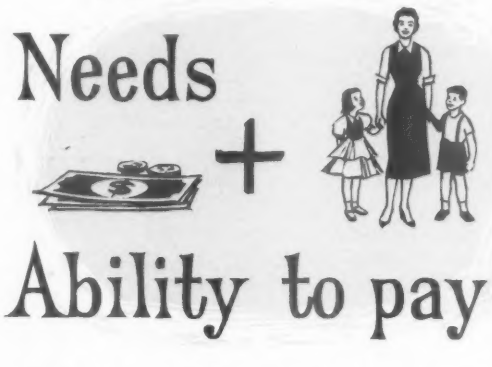
In choosing your policy you'll find there are only four basic types of life insurance to consider—term, straight life, limited payment life, and endowment. There are also combination policies which usually include both straight life and term insurance.

Term Insurance

This is probably the oldest form of insurance contract. As the name implies, it is generally temporary and it provides protection for a limited period like five or 10 years. But, it is the cheapest.

Sometimes term policies may be renewed at the expiration of the term or converted to permanent type insurance. This kind of term insurance (called "Renewable Term" by some companies and "Renewable and Convertible Term" by others) provides for renewal as term insurance without medical examination at the end of each term period up to a given age. For example, under a five-year renewable term this age may be 60. At each renewal the premiums increase and at the end, usually age 65, there is a privilege of converting to permanent insurance.

In such cases, however, a higher premium based on the attained age must be paid. Term policies don't provide for building up cash or loan values. If one wants temporary protection, for example, while he is paying off a mortgage—a term policy may meet the need. In fact, in such situations term insurance policies are available under which the amount of the policy reduces as the amount of the mortgage is reduced by periodic payments.



Term insurance serves a vital purpose during critical periods such as war. It furnishes temporary protection to service personnel at low cost at a time when the risk of loss of life is greatest—nothing more. Despite its limitations, however, term insurance will always fill a certain need. Everyone is apt to find, at some period of his life, that he is facing a temporary crisis—that his death during the next few years might cause untold hardship for his family. It may be well in such circumstances to buy temporary life insurance to protect his family during that period.

Straight Life

The Whole Life Policy (popularly called "straight life" or "ordinary life") as its name implies, protects for the whole of life. It has the lowest premium rate of any lifetime policy with lifetime premiums that remain fixed for the life of the policy. It has a cash value that increases with the age of the policy and can be adapted to a varied range of needs. (If your policy is with a mutual rather than a stock company, its cash value may be even greater as a result of dividends accrued.)

On an average $5,000 policy taken at age 20, you'd pay a monthly premium of about $7.25. It would have

a cash value building up year after year. At the end of 10 years, for example, your policy would have a cash value of something over $450. You can borrow against this cash value whenever you need a loan.

If you reach a time when you no longer want to continue it, you have three choices. you can:

1) Take the cash value in a lump sum.

2) Continue your full $5,000 protection for a given number of years without further cost to you. If you should take this action at age 40, your protection would continue until about 65, or

3) Receive continued protection for a lesser amount for the rest of your life. If you should take this action at age 40, your paid up policy would be worth about $2,500.

Under what circumstances would straight life be your best buy? Here's one example: Suppose you're a sergeant stationed abroad. Your wife works, and your mother takes care of the baby. If you should die, your service benefits would take care of your wife and child. To protect your mother, you buy a $5,000 straight life policy with your wife as contingent beneficiary.

In all probability, your mother will pass away before either you or your wife. In that case, the protection shifts to your wife. She'll need more protection then anyway, especially if you are no longer in service. So, all in all, straight life would be your best buy in this situation.

Limited Payment Life

If you plan after retirement from the Air Force to go into some kind of occupation where the years of productive earnings are limited, perhaps a limited payment life policy would best suit your needs. Such a policy calls for premium payments over a limited period of—say 15, 20, or 30 years—after which the policy is paid up and the protection continues for life.

Limited payment policies provide lifetime protection and contain cash values just as straight life policies do. They are more expensive than straight life, however, because they're designed to give you a paid-up policy at a certain age. After that you're still fully protected, but no longer have to pay premiums. The only thing limited about a limited payment policy is the number of years you pay premiums.

The premium for a $1,000 limited payment policy is higher than for a $1,000 straight life policy because you are limiting your payments to a definite number of years. Its cash value builds up at a faster rate because you're putting more money into it each year.

Endowment Policies

Endowment policies are essentially a form of insured savings. This type policy provides for payment of its face value to the policyholder at a future date or to the beneficiary if he dies before. Premiums on this type policy are higher than on any other, because emphasis is on savings rather than protection.

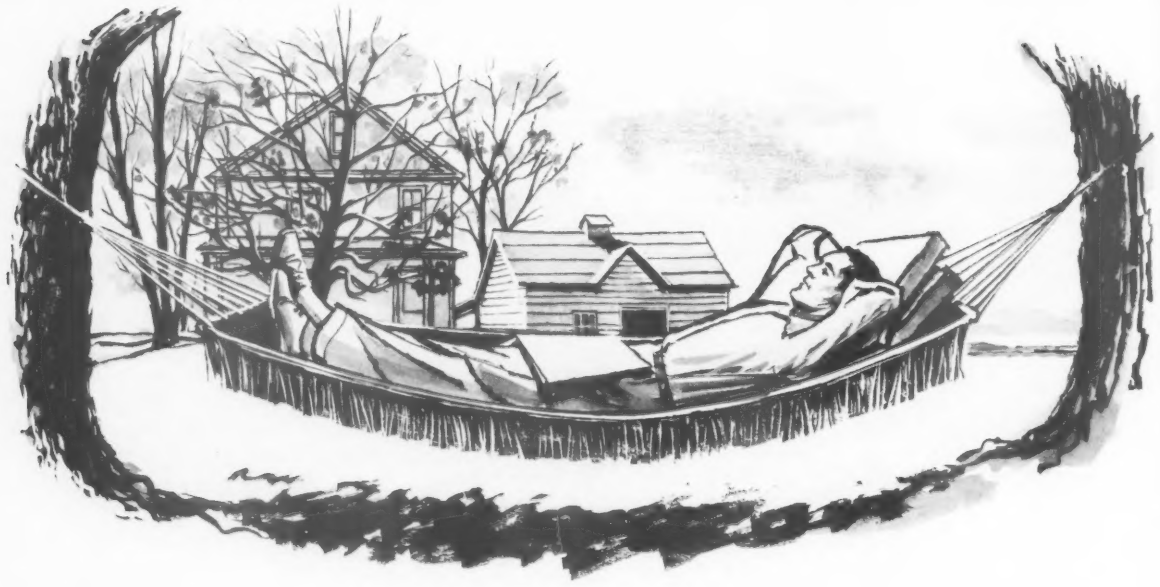
Its greatest usefulness is to the airman in his late 30s or early 40s whose children are fairly well grown. He needs additional protection, but his chief interest is in building an income for retirement.

Because of its emphasis on savings, endowment gives less protection per dollar of premium than any other type policy. And, since the primary need of the young airman is for protection rather than savings, any one of the three types of policies—term, straight life, or limited payment—is usually better suited to his needs.

Suppose you're a master sergeant. You've been in the Air Force 20 years, and plan to retire next month at age 40. You plan to buy a filling station and run it for the next 25 years. At age 65, you expect to quit work and take it easy the rest of your life.

You and your wife can live comfortably for the next 25 years on what you make, plus your retirement of $175 a month. But you know you need some life insurance protection for her during that period. And when you quit work, you'll need more income to add to your retired pay.

Therefore, you buy an endowment-at-age-65 policy with a face value of $16,000. You'll pay monthly premiums of about $54. If you die before you reach 65, your wife will collect the face value. If you live, you'll start drawing $100 a month at age 65. Thus you'll have



an income of $275 a month and, most likely, Social Security on top of that. In such a case, endowment insurance meets your needs.

If you're primarily interested in accumulating a fund for a specific purpose—like paying for a college education for a son or daughter, going into business, or providing a retirement income, an endowment policy may be the type you need.

Combination Policies

It's not unusual for a member of the Air Force with a growing family to be caught in the middle financially. He has protection needs and has to meet them with a limited income.

A term policy may not be the answer, even with its low premium rate. His protection needs continue for life and the term policy doesn't. On the other hand, a straight life policy would provide permanent protection, but he probably couldn't afford to buy enough of this type insurance to do the job.

If you feel you are in such a spot, you may want to consider a Family Income or Family Protection Policy. These policies usually combine, in slightly different ways, the permanent protection of straight life with the cheaper and temporary protection of term insurance. The permanent portion of the policy usually runs for life. The term portion usually lasts for 10, 15, or 20 years to cover the period when children are still growing and your protection needs are greatest. And the term insurance in these policies costs less than if you bought it separately.

In recent years the insurance industry has developed a popular family policy which provides basic permanent insurance protection on the father's life and a smaller amount of term insurance protection on his wife and children.

From the above explanation of the various types of policies you can see that each does a different job and the business of selecting the right policy depends on how each policy meets your needs and your pocketbook. The important thing to remember is to consider both your needs and ability to pay. Your personal affairs section is prepared to offer assistance and advice on all insurance matters. Most people know very little about insurance and are frequently persuaded to buy high cost insurance from companies of doubtful financial stability.

Exploding a Myth

Often you hear Air Force personnel say—"I am worth more dead than alive," visualizing some given sum of insurance. This is a myth. As a matter of fact, few enlisted men or officers can make that statement truthfully.

Disregarding affection, parental guidance, and all sentimental consideration, what does the average man in the Air Force represent to his family as a money producing machine? Let's take a practical example. Assume an airman earns $5,000 a year. To his family, he represents an estate of $100,000 invested and producing regularly at five percent per year. That they may not suffer a direct income loss when he dies, he should leave them an estate of equal amount, or slightly less, since his expenses of living can be deducted. As a matter of practical fact, an airman with that income could not hope to carry such a volume of insurance. Actually, nobody earning a reasonable income is worth more dead than alive and no one ever dies with too much life insurance. The average man does not have enough.

The principles governing the adoption of an adequate insurance program for Air Force personnel may be summarized as follows: Don't buy insurance on a hit-or-miss basis. Have a plan.

Know the amount and kind of service benefits to which you are entitled, since these have a direct bearing on the amount and kind of life insurance you need.

Be sure of your life insurance needs; be certain of your ability to pay each premium as it comes due; understand the benefits which your insurance contract promises; and, before committing yourself to buy a policy, know your company and agent who stand behind your purchase.

SEPARATION SOLILOQUY

To re-up or not to re-up: that is the question.
Whether 'tis harder to suffer in service
The alarms and trials of active duty,
Or to take one's chances of civilian troubles,
And forever regret it. To enlist: to serve,
Four years, and by this act to end
The uncertainty, the endless indecision
That flesh is heir to, and finally settle
That endless question. To quit: to leave,
To leave, perchance in error: Aye—there's the rub;
For in joining the ranks of the mufti clad,
When we have shuffled off this suit of blue,
Must give us pause. There's the pure doubt
That we may make a calamitous error;
For who would bear the whips and scorns of commerce,
The hurrying to work, the punching of the clock,
The pangs of missed promotion, the low take-home pay,
The whimsies of foremen, and the goad,
Of simple economic necessity;
When all of this need not be borne,
By signing a contract?
Who would burdens bear
To grunt and sweat in strange, new labor,
All knowing that it could have been avoided,
If merely we had been wiser before the event
And listened to the siren song of the recruiter.
And would we rather not bear ills already known,
Than fly to others we know not of?
Thus service does make airmen of us all,
And greatly weaken resolution
To give it up, and by so doing,
To have done with all at once
And never more regret with sad regard
Our familiar life of yesteryear.
Decide you now!
The time is here! Recruiter sing your song!
I say no more—Sign here!

Airman's modernized version of Hamlet

SMS George W. Covill
Elgin AFB, Fla.

Glory to God in the highest, and on earth peace, good will toward men.

St. Luke 2:14